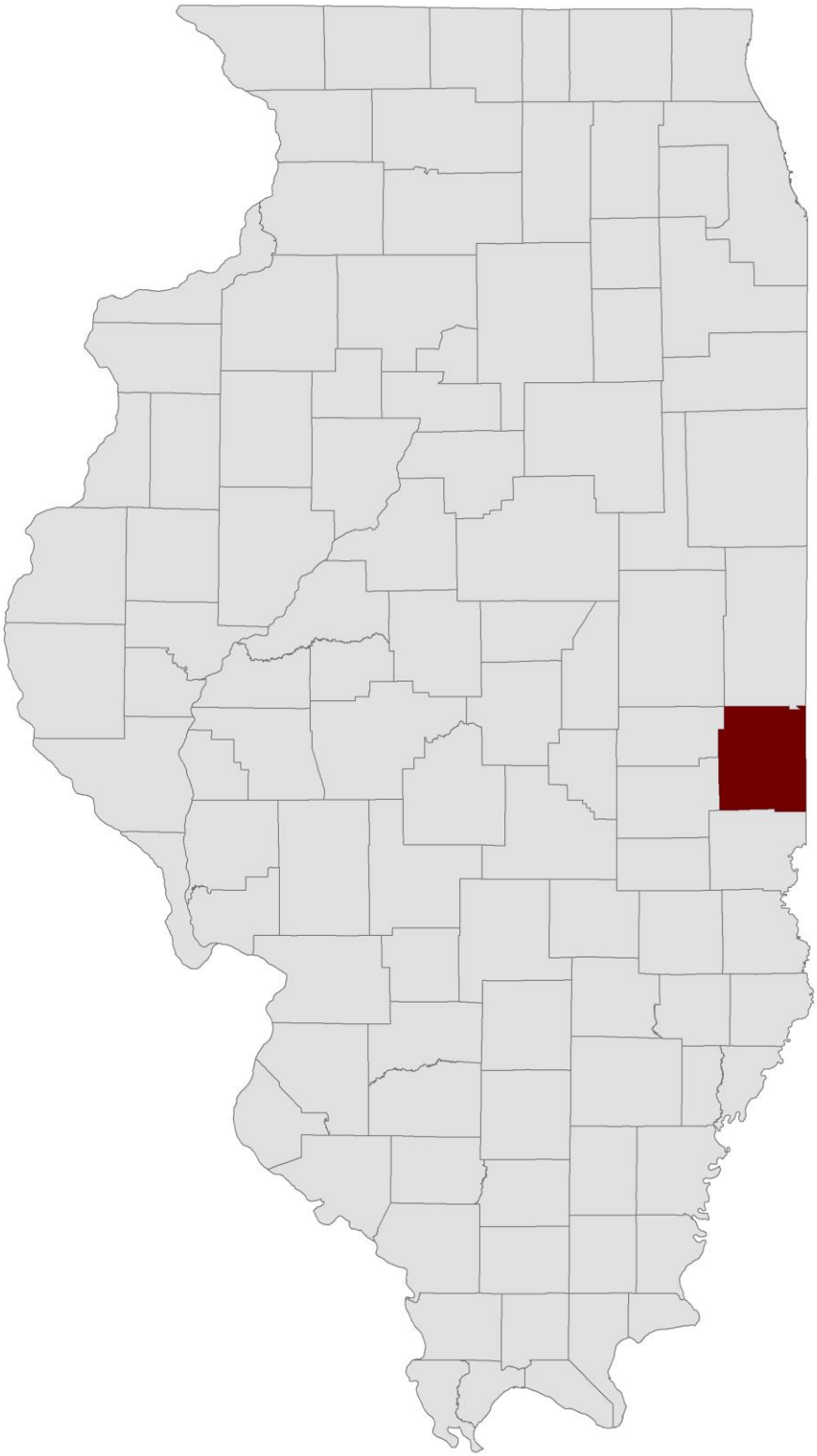
Multi-Hazard Mitigation Plan

Edgar County, IL



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Edgar County, Illinois

Adoption Date: -- _____ --

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Section 1 Introduction

Hazard mitigation is any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) makes reducing hazards one of its primary goals; hazard-mitigation planning and the subsequent implementation of mitigation projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt an MHMP.

In recognition of the importance of planning in mitigation activities, FEMA created Hazus Multi-Hazard (Hazus-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to estimate losses from floods, hurricanes, earthquakes, and other natural hazards and to measure the impact of various mitigation practices that might help reduce those losses.

Southern Illinois University Carbondale (SIU) and The Polis Center (Polis) at Indiana University - Purdue University Indianapolis (IUPUI) are assisting Edgar County in developing their MHMP. SIU and Polis are guiding the planning process, performing the hazard risk assessment, and assisting in identifying sound mitigation activities.

Section 2 Planning Process

2.1 Timeline

The MHMP process is broken into a series of five meetings. These meetings are organized by SIU and hosted by the Edgar County Emergency Service Disaster Agency (ESDA). At these five meetings, various tasks are completed by SIU and the Edgar County multi-hazard mitigation planning team:

Meeting 1: The purpose of Meeting 1 is to introduce the MHMP process and organize resources. SIU gathers local resources that contribute to the detailed county risk assessment.

Meeting 2: SIU presents the county's historical hazards. Based on this information, the planning team identifies natural hazards to include in the plan, and ranks hazards by potential damages and occurrences. The planning team also provides SIU with disaster scenarios for the county risk assessment.

Meeting 3: SIU and Polis present the draft risk assessment, derived from the Hazus-MH and GIS modeling of the identified disasters, to the planning team. The general public is also invited to this meeting through a series of newspaper articles and/or radio spots. At the end of the meeting, SIU encourages the general public to ask questions and provide input to the planning process, fulfilling one of FEMA's requirements for public input.

Meeting 4: This meeting consists of a "brainstorming session." The planning team lends local knowledge to identify and prioritize mitigation strategies and projects that can address the threats identified in the risk assessment. FEMA requires the plan to contain mitigation strategies specific to each hazard and for each incorporated area within the county.

Meeting 5: The planning team reviews the draft plan, proposes revisions, and accepts the plan after SIU incorporates the necessary changes. Subsequently, SIU will forward the county MHMP to the mitigation staff at the Illinois Emergency Management Agency (IEMA) for review prior to submitting it to FEMA.

2.2 Planning Team Information

Jill Taylor, the county ESDA coordinator, heads the planning team. The planning team includes representatives from various county departments, municipalities, and public and private utilities. Table 2-1 identifies the planning team individuals and the organizations they represent.

Table 2-1: Mitigation Planning Team Members

Name	Title	Organization	Jurisdiction
Ben Jenness Sr.	Chairman	County Board	Edgar County
Jeff Voigt	Board Member	County Board	Edgar County
Dan Brunner	Board Member	County Board	Edgar County
Alan Zuber	Board Member	County Board	Edgar County
Karl Farnham	Board Member	County Board	Edgar County
Mike Helsely	Board Member	County Board	Edgar County
Jill Taylor	Coordinator	ESDA	Edgar County
Duane Fidler	Mitigation Liaison	ESDA	Edgar County
Sharlynn Kreamer	Volunteer	ESDA	Edgar County
Bev Markey	Assessor	Assessor's Office	Edgar County

Name	Title	Organization	Jurisdiction
Ross Carroll	GIS Coordinator	Assessor's Office	Edgar County
Arron Lawson	Highway Engineer	Highway Department	Edgar County
Robert Howry	Realty Specialist	Highway Department	Edgar County
Jimmy Wells	Manager	Edgar County Airport	Edgar County
John Holly	Volunteer	ARC	Edgar County
Ed Motley	Sheriff	Sheriff's Department	Edgar County
Steve Guess	Chief Deputy	Sheriff's Department	Edgar County
Eric Shaughessy	Operator	Ambulance Service	Edgar County Special Service Area Ambulance
D. Haddix	Trustee	Township Board	Elbridge Township
Mike Clark	Director	Enterstar	Electric CO-OP
Ralph Craig	Trustee	Township Board	Embarrass Township
Don Camp	Road Commissioner	Road District	Grandview Township
Randel Wood	Trustee	Village Board	Hume
Don Lientz	Road Commissioner	Township Board	Hunter Township
Susan Saxton	Trustee	Village Board	Kansas
J. Lauher	Road Commissioner	Road District	Kansas Township
Cheryl Gill	Mayor	Village Board	Metcalf
Paul Ruff	City Administrator	City of Paris	Paris
Daniel Bishop	Director of Safety	PCH/Clinic	Paris Hospital
Chuck Wooten	Road Commissioner	Road District	Paris Township
Bob Boots	Road Commissioner	Road District	Prairie Township
Mike Pine	Trustee	Village Board	Redmon
Ben Jenness Jr.	Trustee	Township Board	Ross Township
Randy Grafton	Road Commissioner	Road District	Shiloh Township
Doug Mattingly	Trustee	Township Board	Stratton Township
J. Switzer	Road Commissioner	Road District	Symmes Township
Jean McCoy	Mayor	Village Board	Vermilion
Dennis Cary	Mayor	Village Board	Brocton
Louie Bristol	Road Commissioner	Road District	Brouilletts Creek Township
Tony Lorenzen	Supervisor	Township Board	Brouilletts Creek Township
Kris McGinness	Road Commissioner	Road District	Buck Township
Rodney Wofle	Mayor	City Board	Chrisman
Mike Marvin	Chief	Chrisman Fire	Chrisman FPD
Terence Sullivan	Technology Director	Shiloh School	CUSD #1
Lorraine Bailey	Superintendent	Crestwood School	CUSD #4
Vickie Riggen	Principle	Chrisman Grade School	CUSD #6

The DMA 2000 planning regulations require that planning team members from each jurisdiction actively participate in the MHMP process. The planning team was actively involved on the following components:

- Attending the MHMP meetings
- Providing available assessment and parcel data and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the county

A MHMP kickoff meeting was held in Paris on 09/12/2012. Representatives from SIU explained the rationale behind the MHMP program and answered questions from the participants. SIU representatives provided an overview of Hazus-MH, described the timeline and the process of the mitigation planning project, and presented Edgar County with a Memorandum of Understanding (MOU) for sharing data and information.

The planning team met on 09/12/2012, 10/23/2012, 04/17/2013, 06/11/2013, and 10/01/2013. Each meeting was approximately two hours in length. Appendix A includes the minutes for each meeting. During these meetings, the planning team successfully identified critical facilities, reviewed hazard data and maps, identified and assessed the effectiveness of existing mitigation measures, established mitigation projects, and assisted with preparation of the public participation information.

2.3 Public Involvement

The Edgar County ESDA solicited public input during the planning process, and a public meeting (Meeting 3) was held on 04/17/2013 to review the county's risk assessment. Appendix A contains the minutes from the public meeting. Appendix B contains press releases and/or articles sent to local newspapers throughout the public input process.

2.4 Neighboring Community Involvement

The planning team invited participation from various representatives of county government, local city and town governments, community groups, local businesses, and universities. The planning team also invited participation from adjacent counties to obtain their involvement in the planning process. Table 2-2 summarizes details of neighboring stakeholders' involvement.

Table 2-2: Neighboring Community Participation

Person Participating	Neighboring Jurisdiction	Title/Organization	Participation Description
Ted Fisher	Vermilion County	Vermilion County EMA	Reviewed plan; offered comments
Joseph Victor	Douglas County	Douglas County EMA	Reviewed plan; offered comments
Thomas Watson	Coles County	Coles County EMA	Reviewed plan; offered comments
Jerry Lorton	Clark County	Clark County EMA	Reviewed plan; offered comments
JD Kessler	Vigo County, Indiana	Assistant EMA Coordinator	Reviewed plan; offered comments

2.5 Review of Technical and Fiscal Resources

The planning team identified representatives from key agencies to assist in the planning process. SIU obtained technical data, reports, and studies from these agencies. Table 2-3 summarizes these organizations and their contributions.

Table 2-3: Key Agency Resources Provided

Agency Name	Resources Provided
Illinois Environmental Protection Agency	Illinois 2008 Section 303(d) Listed Waters and watershed maps
U.S. Census	County Profile Information, e.g., Population and Physical Characteristics
Department of Commerce and Economic Opportunity	Community Profiles
Illinois Department of Employment Security	Industrial Employment by Sector
NOAA National Climatic Data Center	Climate Data
Illinois Emergency Management Agency	2010 Illinois Natural Hazard Mitigation Plan
Illinois Water Survey (State Climatologist Office)	Climate Data
Headwaters Economics & The Bureau of Land Management	A Socioeconomic Profile – Edgar County, IL

2.6 Review of Existing Plans

Edgar County and its local communities utilized a variety of planning documents to direct community development. These documents include land use plans, comprehensive plans, emergency response plans, municipal ordinances, and building codes. The planning process incorporated the existing natural hazard mitigation elements from previous planning efforts. Table 2-4 lists the plans, studies, reports, and ordinances used to develop the plan.

Table 2-4: Planning Documents Used for MHMP Planning Processes

Author(s)	Year	Title	Description	Where Used
FEMA	2011	Edgar County Flood Insurance Study	Describes the NFIP program, which communities participate; provide flood maps.	Sections 4 and 5
Supervisor of Assessments	2012	GIS Database	Parcel and Assessor Data For Edgar County.	Section 4
State of Illinois Emergency Management Agency	2010	2010 Illinois Natural Hazard Mitigation Plan	This plan provides an overview of the process for identifying and mitigating natural hazards in Illinois as required by the Disaster Mitigation Act of 2000.	Guidance on hazards and mitigation measures and background on historical disasters in Illinois.

2.7 Jurisdiction Participation information

SIU intends this plan to meet the requirements of the DMA 2000 and for each incorporated jurisdiction to adopt it. Table 2-5 lists the incorporated communities included in this multi-jurisdictional plan.

Table 2-5: Participating Jurisdictions

Jurisdiction Name
Edgar County
Brocton
Chrisman
Hume
Kansas
Metcalf
Paris
Redmon
Vermilion
Edgar County Schools (Paris Crestwood, Paris District 95, Shiloh, Chrisman)

2.8 Adoption by Local Governing Body

SIU delivered the draft plan to the Edgar County multi-hazard mitigation planning team for review on 11/24/2013. SIU subsequently incorporated any comments from the planning team into the plan. Upon FEMA approval, the planning team will present and recommend the plan to the County Commissioners for adoption, who adopted it on <date adopted>. The planning team will work with the county and its jurisdictions to ensure all parties adopt the plan. Appendix C includes resolution adoptions of this plan.

2.9 Jurisdiction Participation

DMA 2000 regulations require that each jurisdiction participate in the planning process. Table 2-6 lists each jurisdiction and describes its participation in the construction of this plan.

Table 2-6: Description of Participation for Each Jurisdiction

Jurisdiction Name	Participating Member	Participation Description
Edgar County	Jill Taylor	Reviewed plan; offered comments
Brocton	Dennis Cary	Reviewed plan; offered comments
Chrisman	Rodney Wolfe	Reviewed plan; offered comments
Hume	Randal Wood	Reviewed plan; offered comments
Kansas	Susan Saxton	Reviewed plan; offered comments
Metcalf	Cheryl Gill	Reviewed plan; offered comments
Paris	Paul Ruff	Reviewed plan; offered comments
Redmon	Mike Pine	Reviewed plan; offered comments
Vermilion	Jean McCoy	Reviewed plan; offered comments

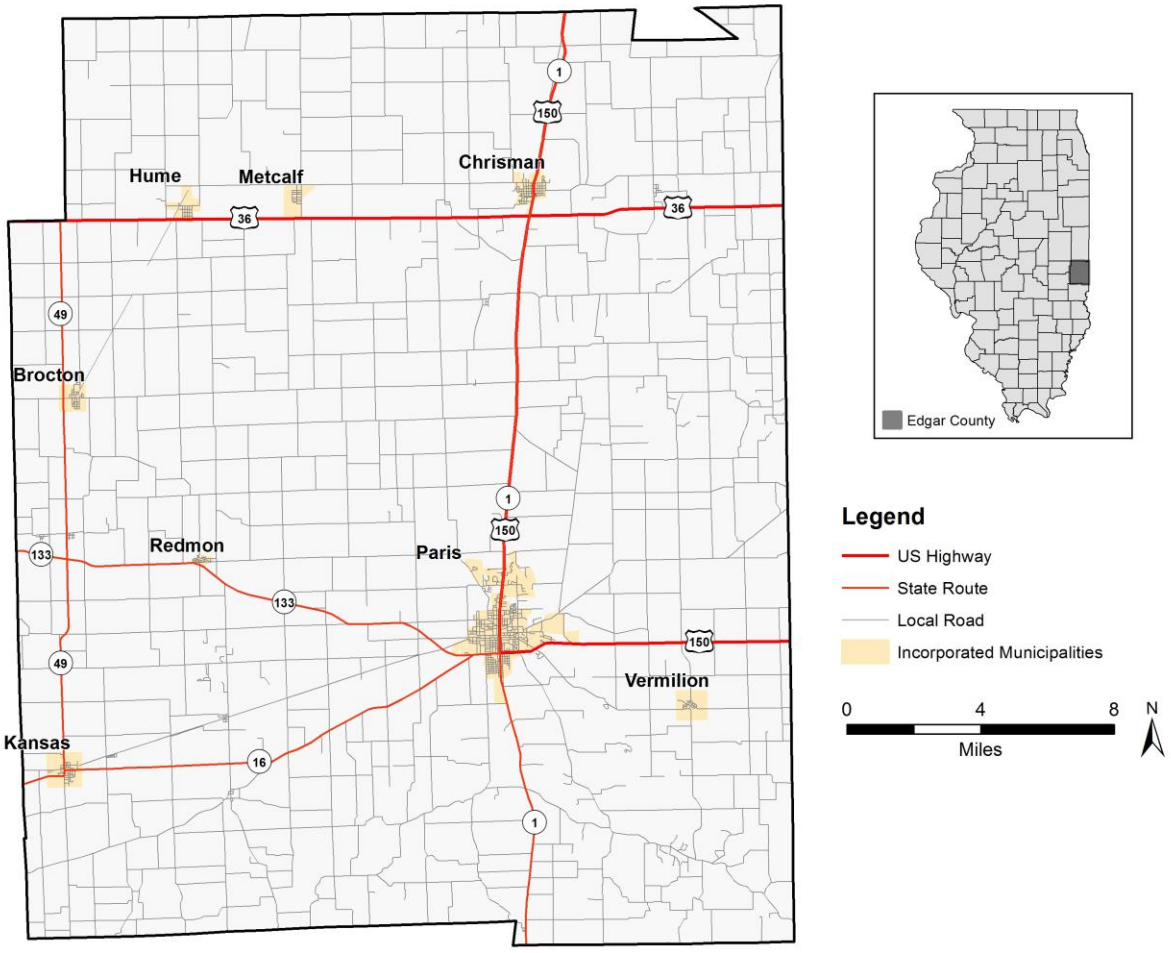
All members of the planning team actively participated in the MHMP meetings, provided available GIS data and historical hazard information, reviewed and provided comments on the draft plans, coordinated and participated in the public input process, and coordinated the county's formal adoption of the plan.

Section 3 County Profile

3.1 County Background

Edgar County is located in east-central Illinois along the Indiana border. Edgar County is surrounded by Vermilion County to the north, Douglas and Coles County to the west and Clark County to the south. Edgar County was established in 1823 and is named after John Edgar, an Irish-born officer in the Royal Navy. Figure 3-1 displays the geographical location of Edgar County and its incorporated municipalities.

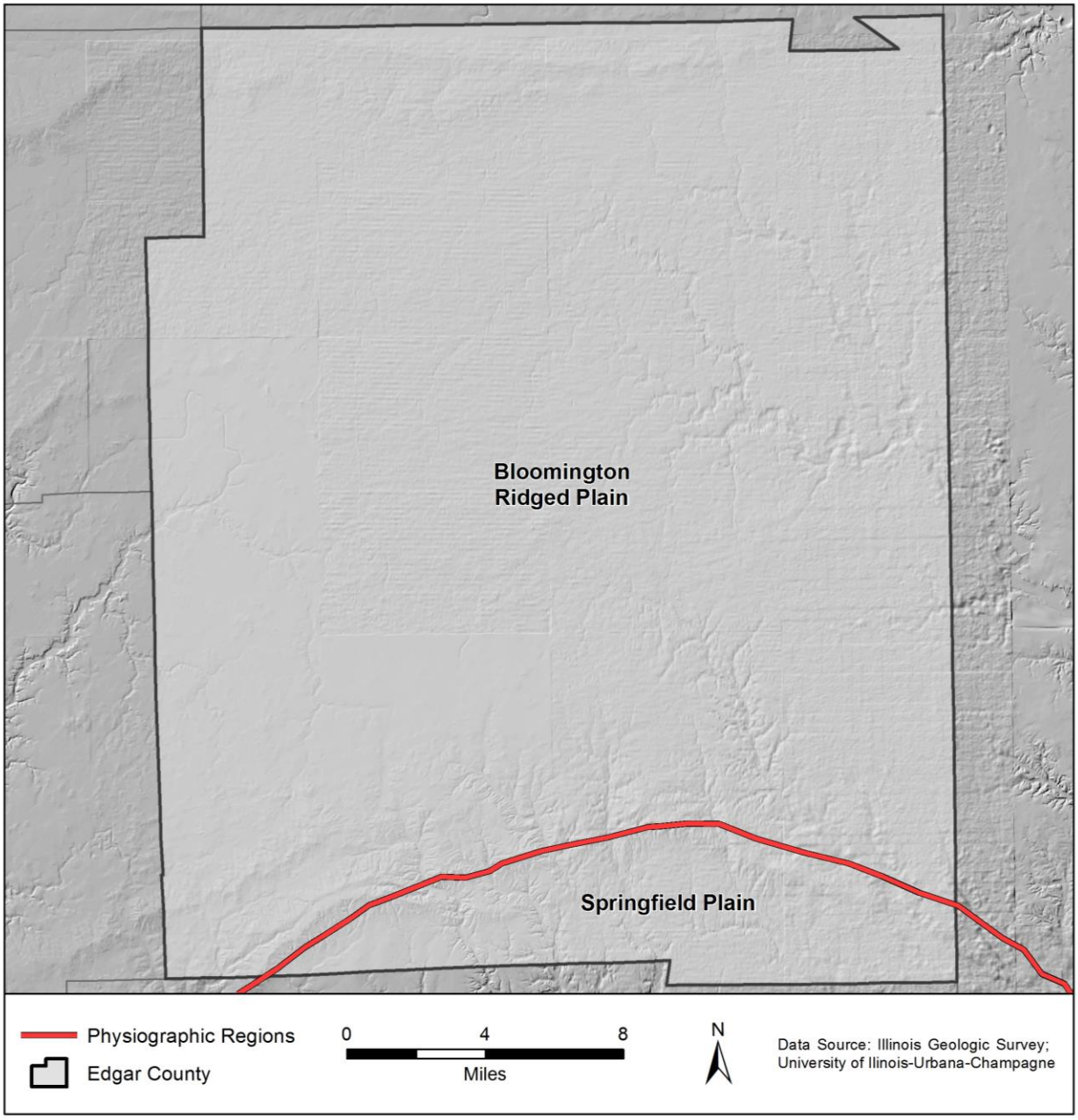
Figure 3-1: Edgar County's Geographical Location



3.2 Topography

Edgar County is situated in the Bloomington Ridged Plain and Springfield Plain physiographic regions. Figure 3-2 depicts the physiographic regions of Edgar County.

Figure 3-2: Physiographic Divisions of Edgar County and Surrounding Region



3.3 Climate

According to the National Weather Service, the climate in Edgar County is humid continental with hot summers and cold winters. Average annual temperature is 52.7 °F. The highest temperature on record is 109 °F and the lowest is -23 °F. Average annual precipitation is 40.02 inches, with most precipitation occurring in spring and summer months. Average annual snowfall is approximately 18.98 inches. Average annual humidity is 79.66%. Average annual wind speed is 18.51 mph.

3.4 Demographics

Edgar County's population is 18,576, a decrease of 5.7% from 2000 to 2010 (U.S. Census Bureau, 2010 Census). The population is spread through 15 townships: Brouilletts Creek, Buck, Edgar, Elbridge, Embarrass, Grandview, Hunter, Kansas, Paris, Prairie, Ross, Shiloh, Stratton, Symmes, and Young America. Edgar County has six incorporated jurisdictions, including: Chrisman, Paris, Brocton, Kansas, Hume, Metcalf, Redmon, and Vermilion. The largest incorporated jurisdiction in Edgar County is Paris, which has a population of approximately 9,856 (U.S. Census Bureau, 2010 Census). Table 3-1 includes the breakdown of population by township.

Table 3-1: Population by Township

Township	2010 Population	Percent of County
Brouillets Creek	235	1.3%
Buck	307	1.7%
Edgar	482	2.6%
Elbridge	830	4.5%
Embarrass	620	3.3%
Grandview	590	3.2%
Hunter	250	1.3%
Kansas	1,003	5.4%
Paris	9,865	53.1%
Prairie	273	1.5%
Ross	1,594	8.6%
Shiloh	162	0.9%
Stratton	481	2.6%
Symmes	1,158	6.2%
Young America	726	4.0%

3.5 Economy

The American Community Survey (2008-2012) reported that the civilian labor force comprised 61.2% of the workforce in Edgar County. Table 3-2 includes the employment distribution by industrial sector. Manufacturing, retail trade, and education represent the largest sectors, employing 54% of the workforce. The annual per capita income in Edgar County is $23,724 (American Community Survey, 2008-2012).

Table 3-2: Industrial Employment Sector

Industrial Sector	2008-2012 County Distribution
Agriculture, forestry, fishing, hunting, and mining	8.6%
Construction	4.7%
Manufacturing	22.8%
Wholesale trade	2.3%
Retail trade	10.0%
Transportation, warehousing and utilities	6.6%
Information	0.4%
Finance, insurance, real estate, and rental/leasing	2.9%
Professional, technical services	5.4%
Educational, health, and social services	21.2%
Arts, entertainment, recreation	5.4%
Other services	5.2%
Public administration	4.7%

3.6 Industry

Edgar County's major employers include the Illinois Department of Transportation (IDOT) and Simonton Windows, both of which are in Paris. Table 3-3 lists other major employers in Edgar County.

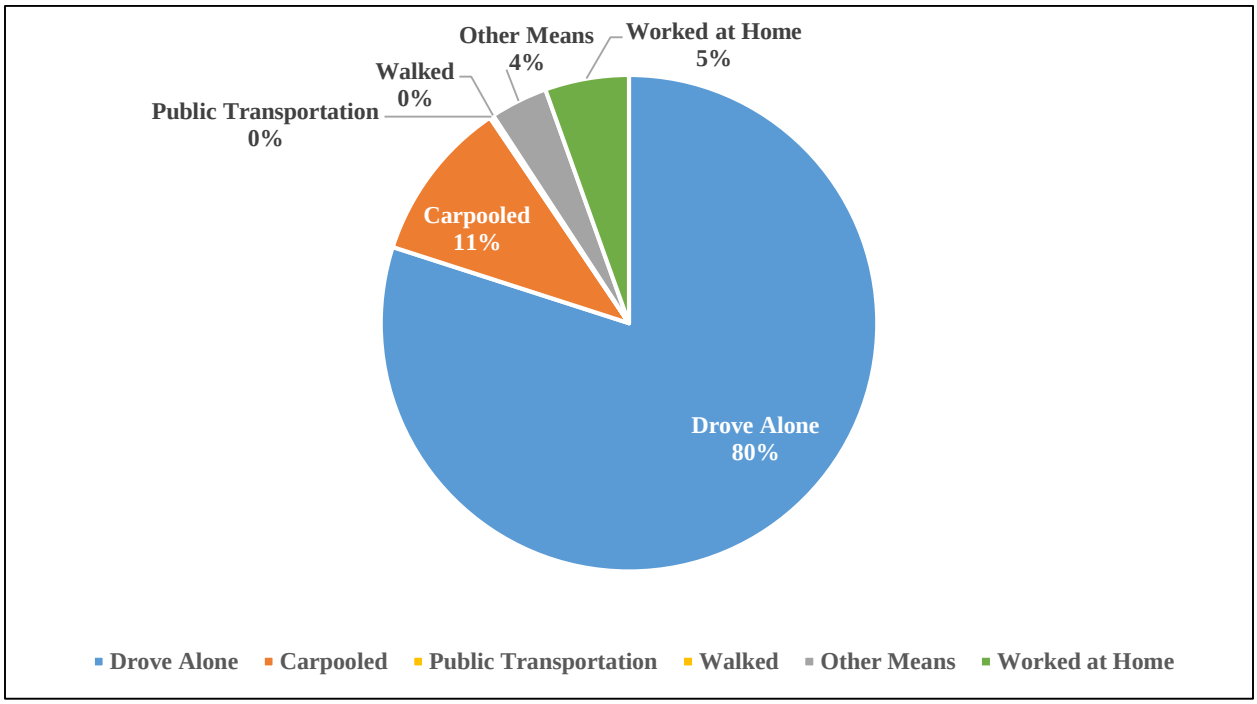
Table 3-3: Edgar County's Major Employers

Employer	Industry	Approximate Number of Employees
North American Lighting	Automotive Lighting	565
Simonton Windows	Vinyl Windows	430
GSI Group	Grain Handling & Storage Equipment Manufacturing	250
Cargill	Grain Milling	150
Paris Metal Products	Steel Fabrication	130
Pretium Packing LLC	Plastic Bottle Manufacturing	125
DON INC.	Metal Jet Engines and Turbine Parts Manufacturing	120

3.7 Commuter Patterns

According to the American Community Survey (2008-2012), approximately 61.2% of Edgar County's population is in the work force. The average travel time from home to work is 23.1 minutes. Figure 3-3 depicts the commuting patterns for Edgar County's labor force.

Figure 3-3: Commuter Patterns for Edgar County

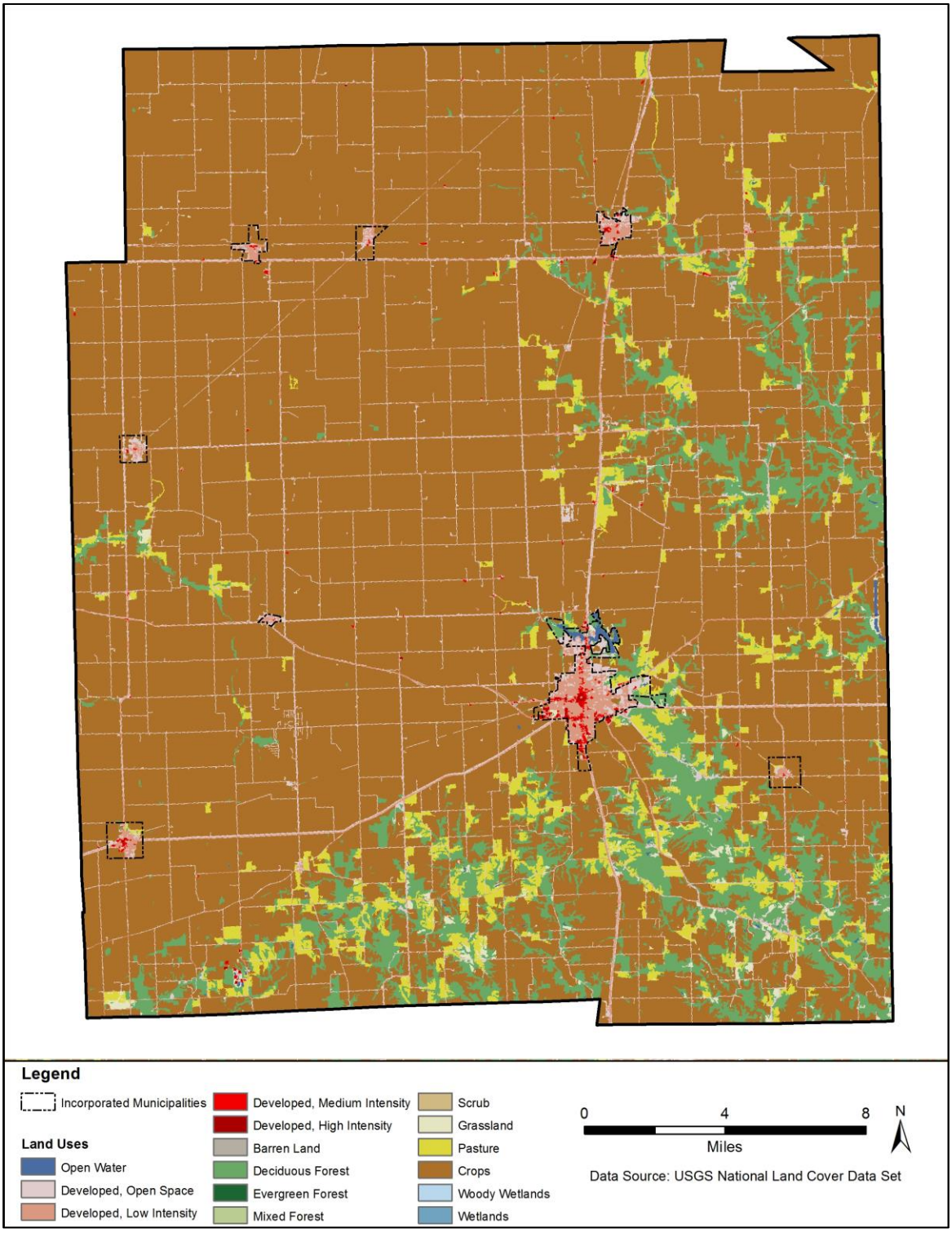


3.8 Land Use and Development Trends

The predominant land cover in Edgar County are crops, followed by deciduous forest and low intensity urban development (USGS National Landcover Data Set, 2001). Figure 3-4 depicts the land use within Edgar County. Agricultural lands are found almost everywhere in Edgar. Deciduous forest cover is

primarily found along Crabapple Creek, Brouilletts Creek, Sugar Creek, and Clear Creek. Significant urban developments include Paris. Edgar County has eight structures in the National Register of Historic Places, including the Paris Carnegie Public Library, which was started by the Paris Women's Club and facilitated by an $18,000 grant from steel mogul Andrew Carnegie.

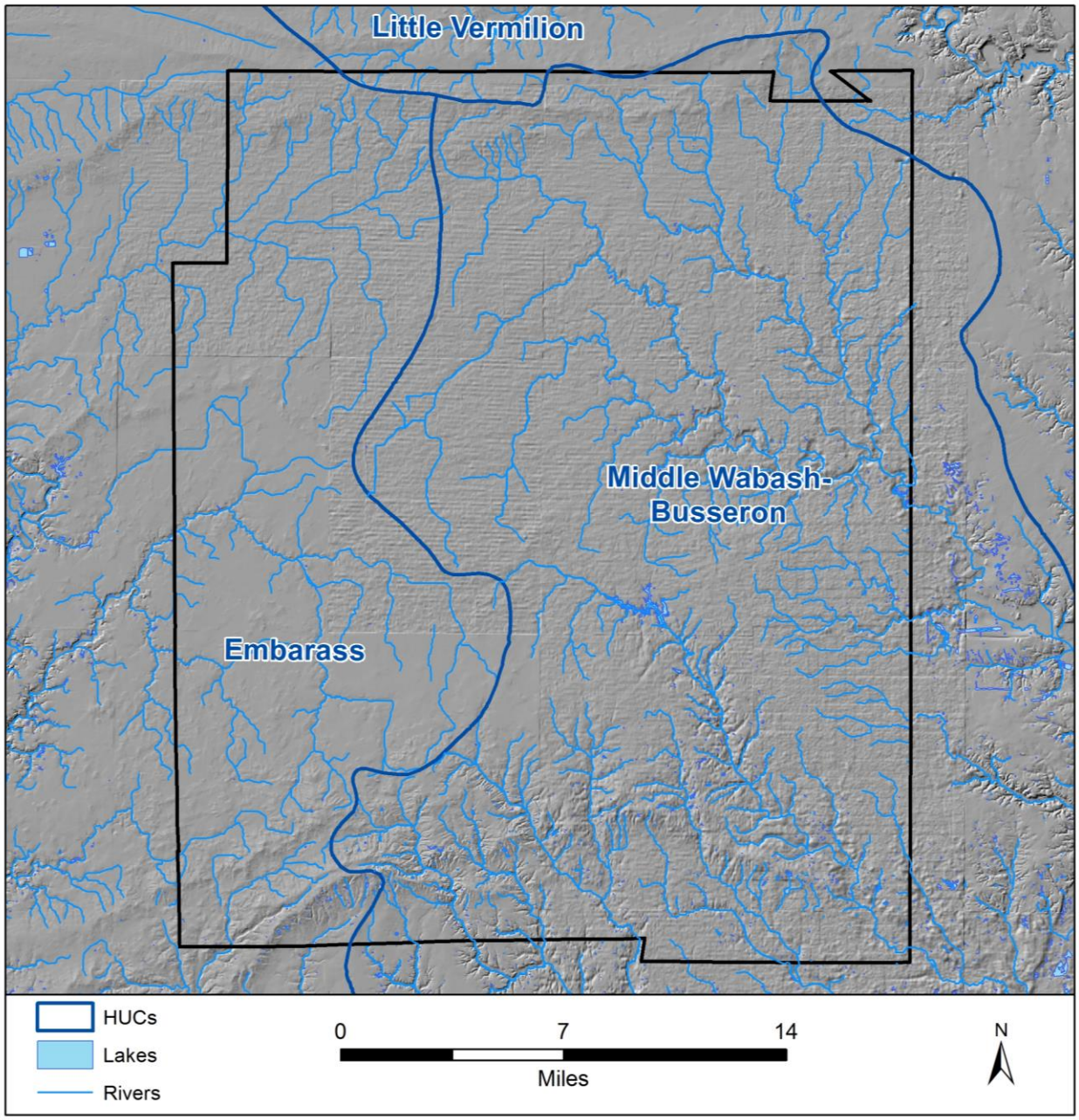
Figure 3-4: Land Use in Edgar County



3.9 Major Lakes, Rivers and Watersheds

Edgar County has several water bodies, with Twin Lakes being the most significant. According to the USGS, Edgar County consists of three drainage basins: Embarrass, Middle Wabash-Busseron, and Little Vermilion. Figure 3-5 depicts the hydrologic units within Edgar County.

Figure 3-5: Major Lakes and Rivers in Edgar County



Section 4 Risk Assessment

The goal of mitigation is to reduce future hazard impacts including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation requires rigorous risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much the disaster could affect the community, and the impact on community assets. A risk assessment consists of three components—hazard identification, vulnerability analysis, and risk analysis.

4.1 Hazard Identification

4.1.1 Existing Plans

The plans identified in Table 2-4 did not contain a detailed risk analysis specifically for Edgar County. SIU and the planning team reviewed these local planning documents to identify historical hazards and help identify risk.

4.1.2 National Hazard Records

4.1.2.1 National Climatic Data Center (NCDC) Records

To assist the planning team, SIU compiled historical storm event data from the National Climatic Data Center (NCDC). NCDC records are estimates of damage reported to the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses.

The NCDC data included 231 reported events in Edgar County from 1955-Feb 2014 (the most updated information as of the date of this plan). The following hazard-profile sections each include a summary table of events related to each hazard type. Table 4-1 summarizes meteorological hazards reported by NCDC for Edgar County. Figures 4-1 and 4-2 summarize the relative frequency of NCDC reported meteorological hazards and the percent of total damage associated with each hazard for Edgar County. Full details of individual hazard events are on the NCDC website. In addition to NCDC data, SIU mapped Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail using SPC-recorded latitudes and longitudes. Appendix D includes a map of these events.

Table 4-1: Summary of Meteorological Hazards Reported by NCDC for Edgar County

Hazards	Time Period		Number of Events	Property Damage *(Millions of Dollars)*	Deaths	Injuries
	Start	*End*				
Flooding	1998	2014	25	$1.19	0	0
Severe Thunderstorm	1955	2014	147	$1.14	2	11
Tornado	1958	2014	26	$0.66	0	20
Winter Storm	1994	2014	26	$0.00	11	41
Extreme Heat	1997	2014	7	$0.00	10	0

Figure 4-1: Number of Meteorological Events Reported by NCDC for Edgar County

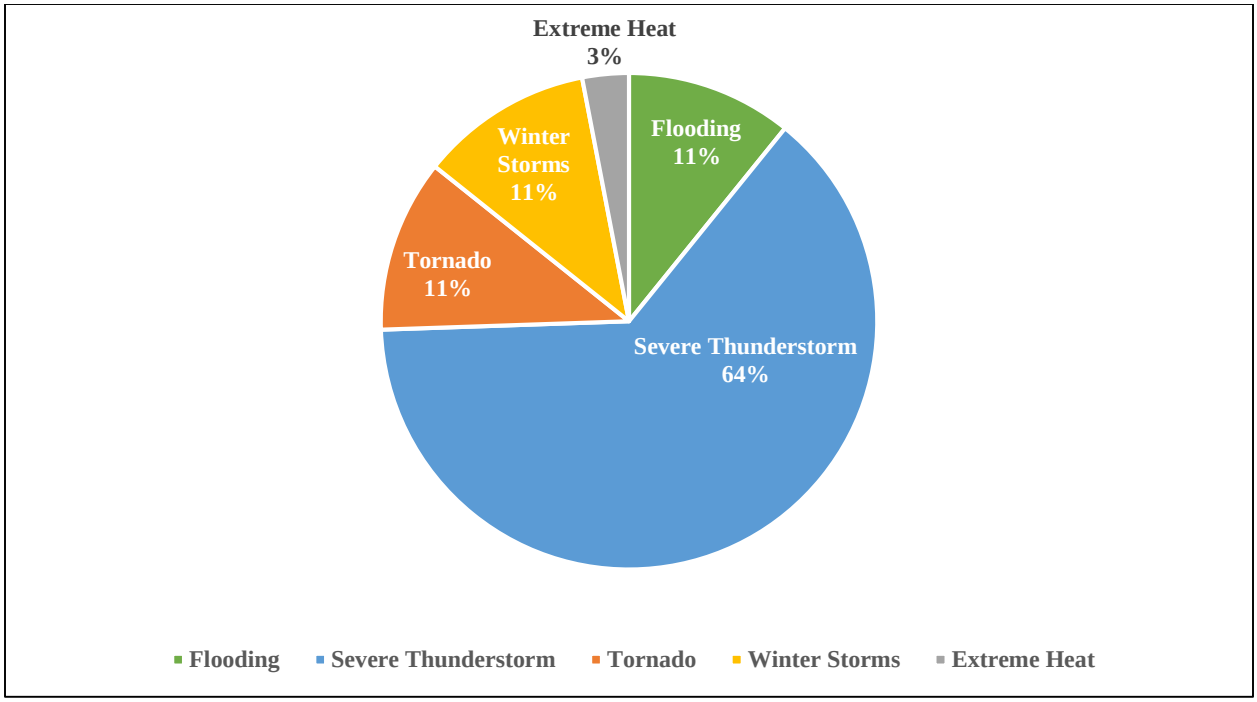
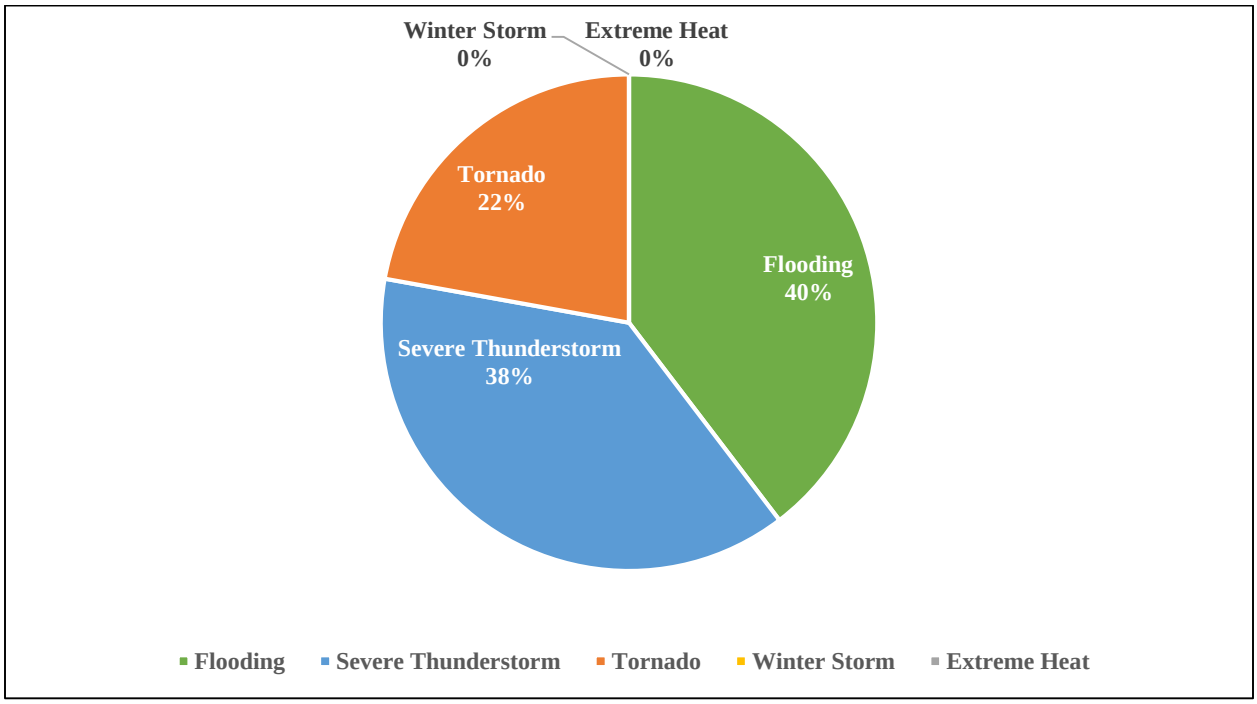


Figure 4-2: Percent Total Damage by Meteorological Hazard Reported by NCDC for Edgar County



4.1.2.2 FEMA Disaster Information

Since 1957, FEMA has declared 53 major disasters and 7 emergencies for the state of Illinois. Emergency declarations allow states to access FEMA funds for Public Assistance (PA); disaster declarations allow for even more PA funding, including Individual Assistance (IA) and the Hazard Mitigation Grant Program (HMGP). Edgar County has received federal aid for seven declared disasters since 1965. Figure 4-3 depicts the disasters and emergencies that have been declared for the state of Illinois and Edgar County since 1965. Table 4-2 lists specific information for each disaster declaration in Edgar County.

Figure 4-3: FEMA-Declared Emergencies and Disasters in Illinois and Edgar County (1965-2013)

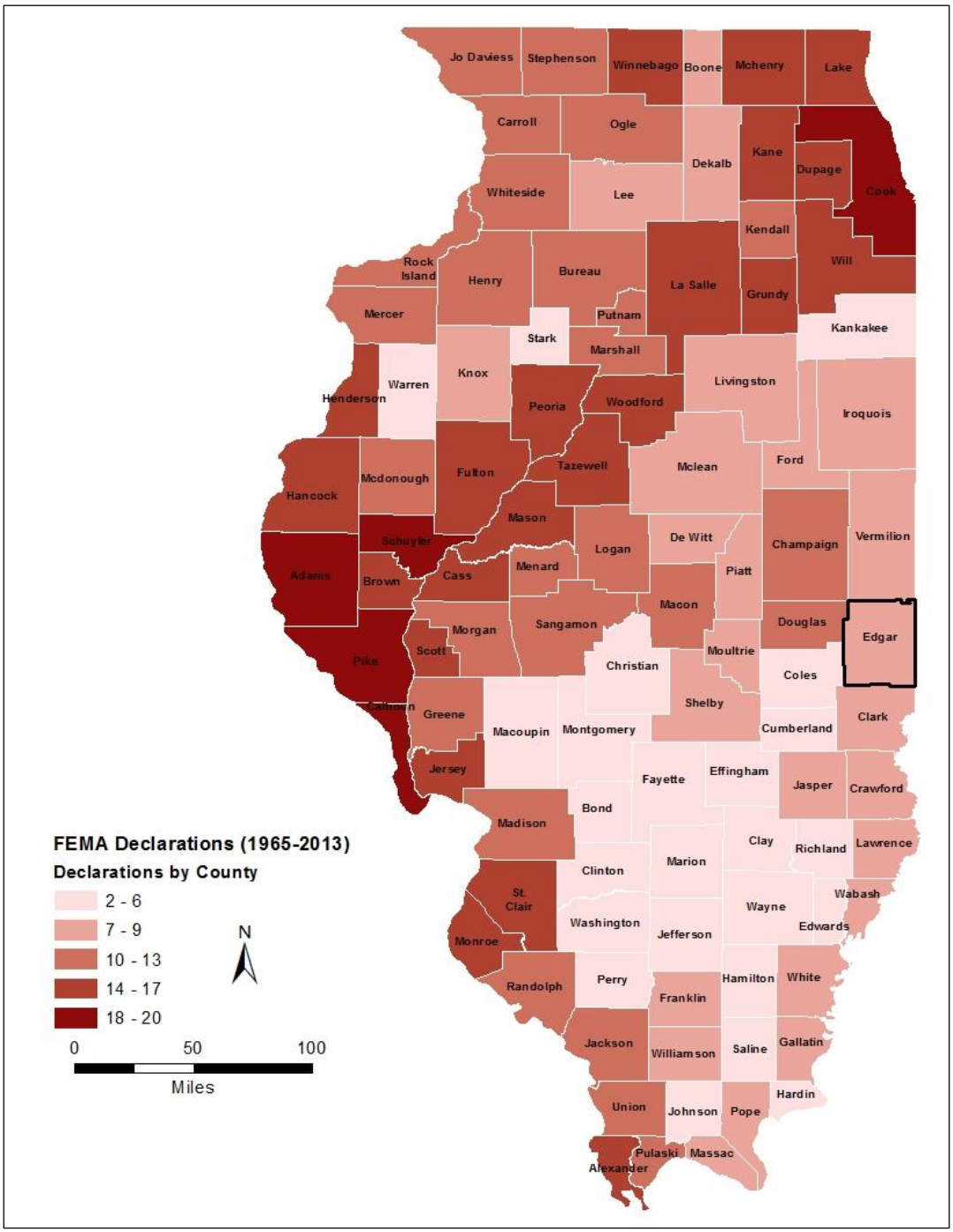


Table 4-2: Detail of FEMA-Declared Emergencies and Disasters in Edgar County (1965-present)

Declaration Number	Date of Declaration	Description
438	06/10/1974	Flooding; Severe Storms
860	03/06/1990	Freezing Rains; Ice Storm; Severe Winds
871	06/22/1990	Flooding; Severe Winds; Tornado; Thunderstorms; Torrential Rains
1416	05/21/2002	Flooding; Excessive Rainfall; Severe Storms; Tornado
3230	09/07/2005	Hurricane Sheltering
1771	06/24/2008	Flooding; Sever Storms
1960	03/17/2011	Severe Winter Storm

4.1.3 Hazard Ranking Methodology

Based on planning team input, national datasets, and existing plans, Table 4-3 lists the hazards Edgar County will address in the MHMP. In addition, these hazards ranked the highest based on the Risk Priority Index (RPI) discussed in section 4.1.4.

Table 4-3: Planning Team Hazard List

Hazard
Tornado
Flooding
Hazardous Materials Release
Drought
Winter Storm
Fire
Earthquake
Thunderstorm

4.1.4 Calculating the Risk Priority Index

The RPI quantifies risk as the product of hazard probability and magnitude so planning team members can prioritize mitigation strategies for high-risk-priority hazards. Planning team members use historical hazard data to determine probability and knowledge of local conditions to determine the possible severity of a hazard. Tables 4-4 and 4-5 display the criteria the planning team used to quantify hazard probability and magnitude.

Table 4-4: Future Occurrence Ranking

Probability	Characteristics
4 - Highly Likely	Event is probable within the calendar year. Event has up to 1 in 1 year chance of occurring. (1/1=100%) History of events is greater than 33% likely per year.
3 - Likely	Event is probable within the next three years. Event has up to 1 in 3 years chance of occurring. (1/3=33%)

Probability	Characteristics
	History of events is greater than 20% but less than or equal to 33% likely per year.
2 - Possible	Event is probable within the next five years. Event has up to 1 in 5 years chance of occurring. (1/5=20%) History of events is greater than 10% but less than or equal to 20% likely per year.
1 - Unlikely	Event is possible within the next ten years. Event has up to 1 in 10 years chance of occurring. (1/10=10%) History of events is less than or equal to 10% likely per year.

Table 4-5: Hazard Magnitude

Magnitude/Severity	Characteristics
8 - Catastrophic	Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.
4 - Critical	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 14 days. More than 25% of property is severely damaged.
2 - Limited	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than seven days. More than 10% of property is severely damaged.
1 - Negligible	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.

The product of hazard probability and magnitude is the RPI. The planning team members ranked specified hazards based on the RPI, with larger numbers corresponding to greater risk. Table 4-6 identifies the RPI and ranking for each hazard specified by the planning team.

Table 4-6: Edgar County Hazard Risk Priority Index and Ranking

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Tornado	3	8	24	1
Flooding	4	4	16	2
Hazardous Materials Release	3	4	12	3
Thunderstorm	3	2	6	4
Winter Storm	3	2	6	4
Drought	3	2	6	4
Fire	3	2	6	5
Earthquake	2	2	4	6

4.1.5 Jurisdictional Hazard Ranking

Each jurisdiction created its own RPI because hazard susceptibility may differ by jurisdiction. During the five-year review of the plan, the planning team will update this table to ensure these jurisdictional rankings accurately reflect each community's assessment of these hazards. Table 4-7 lists the jurisdictions and their

respective hazard rankings (Ranking 1 being the highest concern). The jurisdictions made these rankings at Meeting 2, and community perceptions may change throughout the planning process.

Table 4-7: Hazard Ranking by Jurisdiction

Jurisdiction	Hazard							
	Tornado	**HAZMAT**	**Earthquake**	**T-storms**	**Flooding**	**Drought/ Heat**	**Winter Storms**	**Fire**
Brouilletts Creek Township	-	-	-	2	3	-	1	-
Chrisman	-	3	-	2	1	-	-	4
Chrisman Fire Prot. Dist.	2	5	5	1	5	-	4	3
Chrisman School District	1	4	5	2	1	3	1	2
E.C.H.D.	-	-	-	3	1	-	2	-
E.C.P.H.D.	3	7	6	2	4	5	1	
E.C.S.O.	-	2	-	1	-	-	3	-
Edgar Township	2	5	5	1	4	-	4	3
Elbridge Township	2	3	3	1	2	-	2	-
Embarrass Township	-	-	-	3	1	-	2	-
Hume	3	6	8	1	2	4	7	5
Hunter Township	-	-	-	1	2	4	3	-
Kansas Township	-	-	-	2	1	-	3	-
Metcalf	3	6	8	5	1	7	2	4
Paris	1	-	-	2	-	-	-	
Paris Community Hospital	1	2	5	6	4	8	3	7
Paris Unit #4	4	3	-	1	-	-	2	5
Prairie Township	-	-	-	2	3	-	1	-
Redmon	1	-	4	3	-	-	2	-

Jurisdiction	Hazard							
	Tornado	HAZMAT	Earthquake	T-storms	Flooding	Drought/ Heat	Winter Storms	Fire
Ross Township	2	4	-	3	1	-	5	-
Shiloh School District	2	3	5	4	4	-	1	4
Shiloh Township	1	-	-	3	-	-	2	-
Stratton Township	2	3	3	1	2	-	2	-
Symmes Township	5	4	6	2	1	7	3	8
Vermilion	1	6	5	2	4	-	3	-
Edgar Co. American Red Cross	3	2	1	4	5	6	7	8

4.1.6 GIS and Hazus-MH

The third step in this risk assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. SIU quantified the hazards using GIS analyses and Hazus-MH where possible. This process reflects a Level 2 Hazus-MH analysis. A level 2 Hazus-MH analysis involves substituting selected Hazus-MH default data with local data and improving the accuracy of model predictions.

Depending upon the analysis options and the quality of data the user inputs, Hazus-MH generates a combination of site-specific and aggregated loss estimates. Hazus-MH is not intended as a substitute for detailed engineering studies; it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This plan does not fully document the processes and procedures completed in its development, but this documentation is available upon request.

Table 4-8 indicates the analysis type (i.e. GIS, Hazus-MH, or historical records) used for each hazard assessment.

Table 4-8: Risk Assessment Tool Used for Each Hazard

Hazard	Risk Assessment Tool(s)
Tornado	GIS-based
Winter Storms	Historical Records
Severe Thunderstorm	Historical Records
Flooding	Hazus-MH
Fire	Historical Records
Hazmat	GIS-based
Earthquakes	Hazus-MH

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

4.2.1.1 Processes and Sources for Identifying Assets

SIU first updated the Hazus-MH default critical facilities data using state resources. At meeting one, the planning team used their resources to further update this information. SIU and the county used local GIS data to verify the locations of all critical facilities. SIU GIS analysts incorporated these updates and corrections to the Hazus-MH data tables prior to performing the risk assessment. The updated Hazus-MH inventory contributed to a Level 2 analysis, which improved the accuracy of the risk assessment.

Updates to the default Hazus-MH data include:

- Updating the Hazus-MH defaults, critical facilities, and essential facilities based on the most recent available data sources.
- Reviewing, revising, and verifying locations of critical and essential point facilities with local input.
- Applying the essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) to the Hazus-MH model data.
- Updating Hazus-MH reports of essential facility losses.

SIU made the following assumptions during analysis:

- SIU used Hazus-MH aggregate data to model the building exposure for all earthquake analysis. SIU assumes that the aggregate data is an accurate representation of Edgar County.
- SIU restricts the analysis to the county boundaries. Events that occur near the county boundaries do not contain damage assessments from adjacent counties.
- SIU assumes that for each tax-assessment parcel, there is only one building that bares all the associated values (both structure and content).
- SIU assumed that for each tax-assessment parcel that all structures are wood-framed, one-story, slab-on-grade structures, unless otherwise stated in assessment records. These assumptions are based on sensitivity analyses of Hazus and regional knowledge.

4.2.1.2 Essential Facilities List

Table 4-9 identifies the number of essential facilities identified in Edgar County. Essential facilities are a subset of critical facilities. Appendices E and F include a list and map of all critical facilities in Edgar County.

Table 4-9: Essential Facilities

Facility	Number of Facilities
Care Facilities	1
Emergency Operations Centers	1
Fire Stations	13
Police Stations	4
Schools	15

4.2.1.3 Facility Replacement Costs

Table 4-10 identifies facility replacement costs and total building exposure. Edgar County provided local assessment data for updates to replacement costs. Table 4-10 also includes the estimated number of buildings within each occupancy class.

Table 4-10: Building Exposure

General Occupancy	Estimated Total Buildings	Total Building Exposure (x $1000)
Residential	6416	1,195,665
Agriculture	0	0
Commercial	490	178,938
Education	15	220,690
Government	17	10,300
Religion	0	0
Industrial	0	0
Total:	**6938**	**$1,605,593**

4.3 Future Development

As the county's population grows, the residential and urban areas will extend further into the county, placing more pressure on existing transportation and utility infrastructure while increasing the rate of farmland conversion. Edgar County will address specific mitigation strategies in Section 5 to alleviate such issues.

Edgar County is vulnerable to a variety of natural hazards, therefore the county government—in partnership with state government—must make a commitment to hazard mitigation. Edgar County is committed to ensuring that county elected and appointed officials become informed leaders regarding community hazards so that they are better prepared to set and direct policies for emergency management in mitigation, preparedness, response, and recovery.

4.4 Hazard Profiles

4.4.1 Tornado Hazard

Hazard Definition

Tornadoes are violently rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently rotating column of air can reach the ground quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are a significant risk to Illinois and its citizens. Tornadoes can occur at any time on any day. The unpredictability of tornadoes makes them one of Illinois' most dangerous hazards. Tornado winds are violently destructive in developed and populated areas. Current estimates place maximum wind velocity at about 300 miles per hour, but higher values can occur. A wind velocity of 200 miles per hour results in a pressure of 102.4 pounds per square foot—a load that exceeds the tolerance limits of most buildings. Thus, it is easy to understand why tornadoes can devastate the communities they hit.

Tornadoes are classified according to the Enhanced Fujita tornado intensity scale. The Enhanced Fujita scale ranges from intensity EF0, with effective wind speeds of 40 to 70 miles per hour, to EF5 tornadoes, with effective wind speeds of over 260 miles per hour. Table 4-11 outlines the Enhanced Fujita intensity scale.

Table 4-11: Enhanced Fujita Tornado Rating

Enhanced Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
0 *Gale*	40-72 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, signboards damaged, shallow-rooted trees blown over.
1 *Moderate*	73-112 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
2 *Significant*	113-157 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
3 *Severe*	158-206 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
4 *Devastating*	207-260 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
5 *Incredible*	261-318 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Previous Occurrences of Tornadoes

The NCDC database reported 26 tornadoes/funnel clouds in Edgar County since 1958. The most recent recorded event occurred on 04/19/2011, when an F1 tornado touched down 1.7 miles northeast of Chrisman, travelled northeastward, and dissipated 2.8 miles northeast of Chrisman.

Table 4-12 identifies NCDC-recorded tornadoes that caused damage, death, or injury in Edgar County. Additional details of individual hazard events are on the NCDC website.

Table 4-12: NCDC-Recorded Tornadoes That Caused Damage, Death, or Injury in Edgar County

Location or County*	Date	EF-Scale	Deaths	Injuries	Property Damage (x $1000)	Crop Damage (x $1000)
Edgar	5/25/1984	F2	0	0	250	0
Chrisman	4/19/2011	F1	0	0	140	0
Metcalf	7/21/2008	F1	0	0	85	0
Horace	7/8/2008	F0	0	0	60	0
Edgar	7/30/1992	F0	0	0	25	0
Edgar	6/13/1958	F1	0	0	25	0
Edgar	5/15/1986	F1	0	0	25	0
Edgar	6/2/1990	F2	0	0	25	0
Edgar	4/22/1963	F3	0	20	25	0
Edgar	5/24/1970	F1	0	0	2.5	0
Edgar	7/7/1982	F0	0	0	0.03	0
Edgar	5/3/1958	F2	0	0	0.03	0
		Total:	**0**	**20**	**$663**	**$0**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Tornado Hazard

The entire county has the same risk of tornado occurrence. Tornadoes can occur at any location within the county.

Hazard Extent for Tornado Hazard

Historical tornadoes generally moved from southwest to northeast across the county. The extent of the hazard varies in terms of the size of the tornado, its path, and its wind speed.

Risk Identification for Tornado Hazard

Based on historical information, the probability of future tornadoes in Edgar County is likely. The county should expect tornadoes with varying magnitudes to occur in the future. Tornadoes ranked as the number one hazard according to the RPI.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
3	x	8	=	24

Vulnerability Analysis for Tornado Hazard

Tornadoes can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan considers all buildings located within the county as vulnerable. Tables 4-9 and 4-10 display the existing buildings and infrastructure in Edgar County.

Critical Facilities

All critical facilities are vulnerable to tornadoes. A critical facility is susceptible to many of the same impacts as any other building within the jurisdiction. These impacts vary based on the magnitude of the tornado but can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of facility functionality (e.g., a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all of the essential facilities in the area. Appendices E and F include a list and map of all critical facilities in Edgar County.

Building Inventory

Table 4-10 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function (e.g., damaged home will no longer be habitable, causing residents to seek shelter).

Infrastructure

The types of infrastructure that could be impacted during a tornado include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that any number of these structures could become damaged during a tornado. The impacts to these structures include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable rail lines. Bridges could fail or become impassable, causing risk to motorists.

GIS-based Tornado Analysis

SIU conducted two tornado scenarios for Edgar County through the towns of Hume and Metcalf as well as Redmon. The planning team selected these scenarios at meeting 2. The following analysis quantifies the

anticipated impacts of tornadoes in the county in terms of numbers and types of buildings and infrastructure damaged.

SIU used GIS-overlay modeling to determine the potential impacts of an F4 tornado. The analysis used a hypothetical path based upon the F4 tornado event that runs for 7.5 miles through Redmon and 12.4 miles through Hume and Metcalf. Table 4-13 depicts tornado damage curves and path widths (NOAA) utilized for the modeled scenario. The damage curve is based on conceptual wind speeds, path winds, and path lengths from the Enhanced-Fujita Scale guidelines.

Table 4-13: Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
5	2,400	100%
4	1,800	100%
3	1,200	80%
2	600	50%
1	300	10%
0	150	0%

Degrees of damage depend on proximity to the path centerline within a given tornado path. The most intense damage occurs within the center of the damage path, with decreasing amounts of damage away from the center. To model the F4 tornado, SIU used GIS to create the desired tornado path and subsequently add buffers (damage zones) around the tornado path. Figure 4-4 and Table 4-14 illustrate the zone analysis. Figure 4-5 depicts the selected hypothetical tornado paths, and Figures 4-6 and 4-7 show the damage curve buffers for each path.

Figure 4-4: Tornado Analysis (Damage Curves) Using GIS Buffers

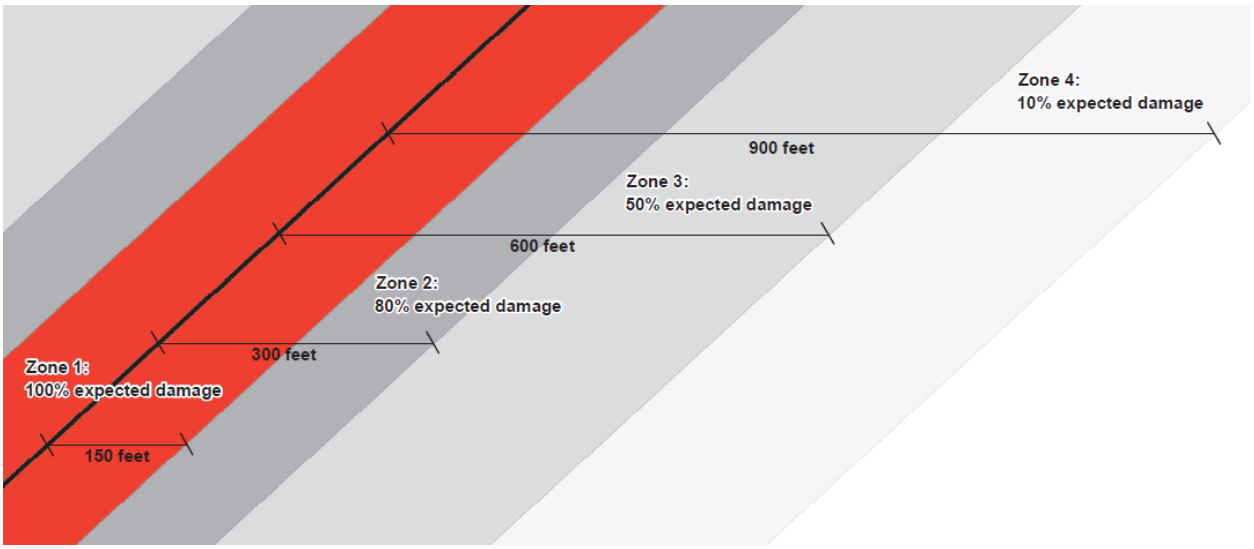


Table 4-14: F4 Tornado Analysis Using GIS Buffers

Zone	Buffer (feet)	Damage Curve
1	0-150	100%
2	150-300	80%
3	300-600	50%
4	600-900	10%

Figure 4-5: Tornado Tracks Through Hume, Metcalf, and Redmon

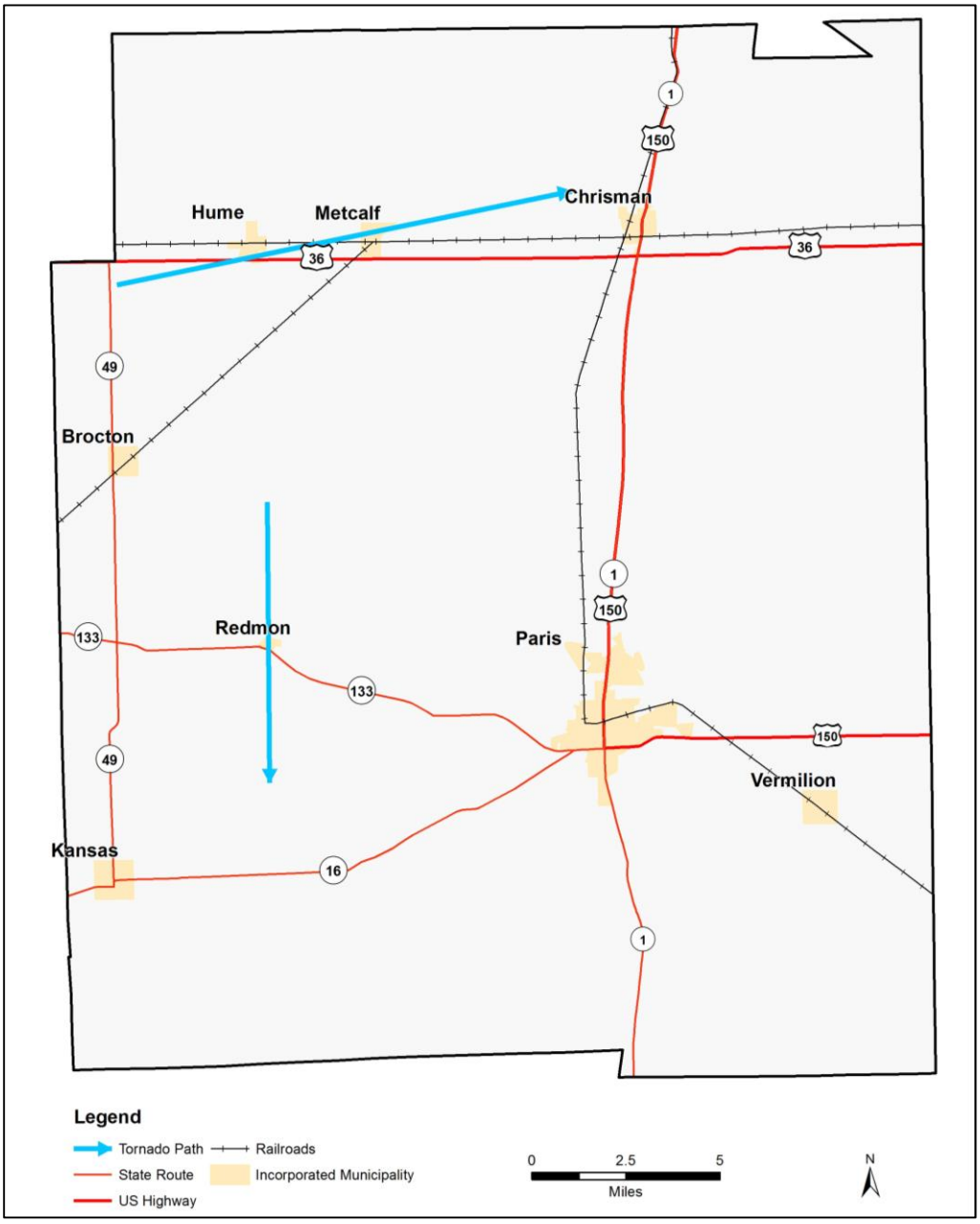


Figure 4-6: Modeled F4 Damage Buffers in Hume and Metcalf

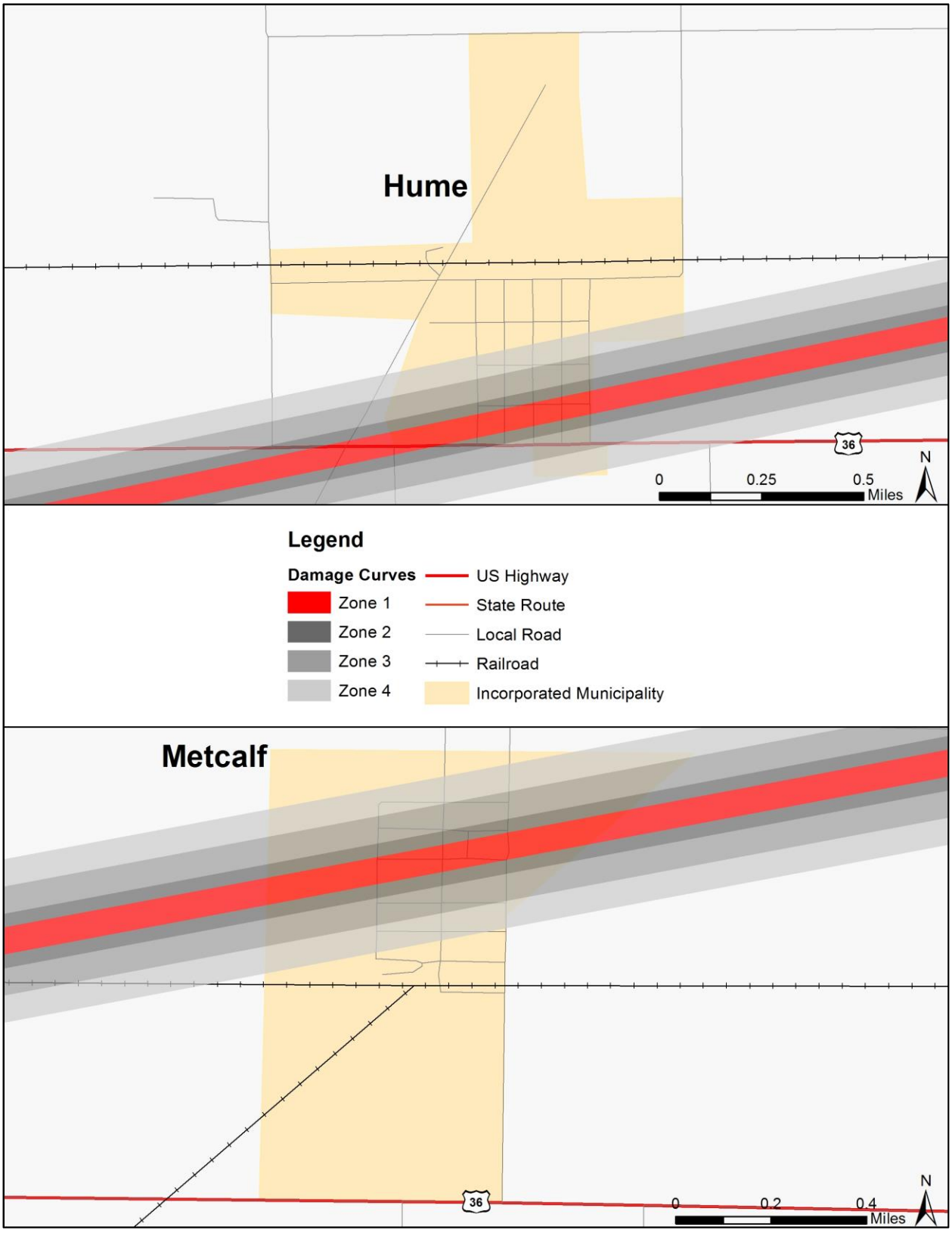
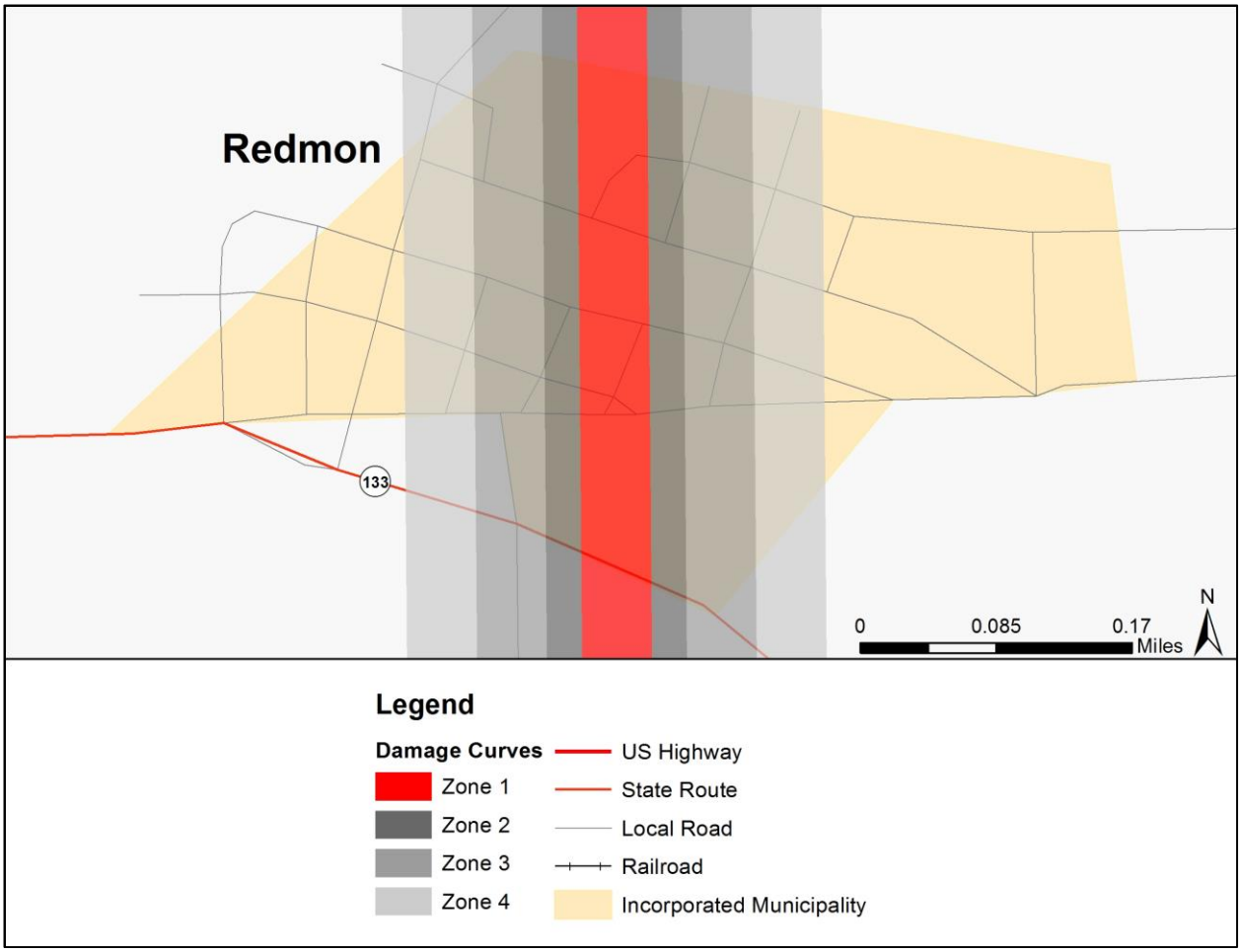


Figure 4-7: Modeled F4 Damage Buffers in Redmon



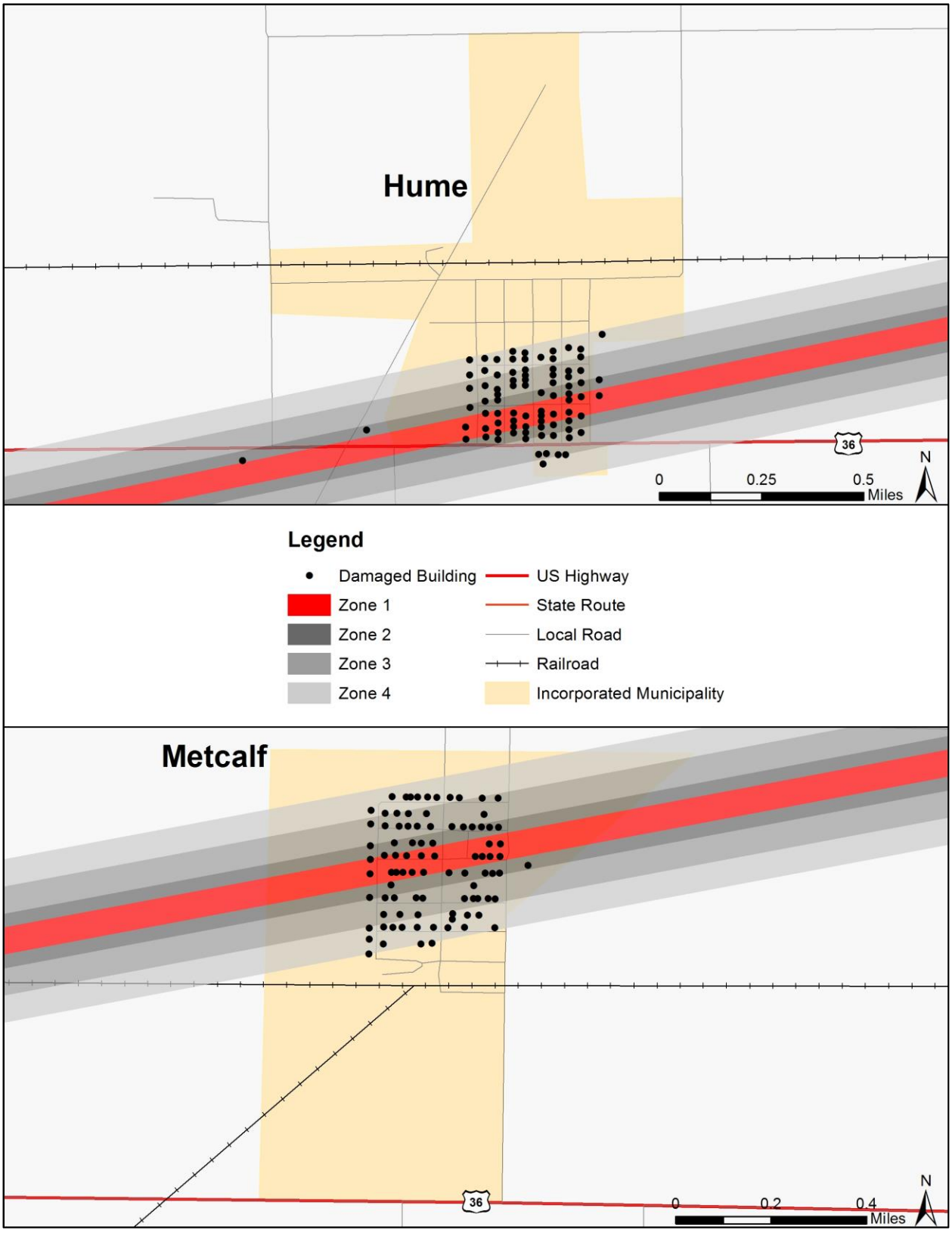
Modeled Impacts of a F4 Tornado in Hume and Metcalf, IL

Table 4-15 and Figure 4-8 show the results of the tornado analysis for Hume and Metcalf, IL. The GIS analysis estimates that the modeled tornado would damage 175 buildings, which is approximately 50% of the total buildings in both Hume and Metcalf. The estimated building losses are over $9,500,000. The building losses are an estimate of building replacement costs multiplied by the damage percent.

Table 4-15: Estimated Building Losses by Occupancy Type (x $1000) in Hume and Metcalf

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$3,817	$3,101	$2,163	$464
Commercial	$8	$7	$22	$13
Industrial	$0	$0	$0	$0
Agriculture	$0	$0	$0	$0
Religious	$0	$0	$0	$0
Government	$0	$0	$0	$0
Education	$0	$0	$0	$0
Total:	**$3,825**	**$3,108**	**$2,185**	**$477**

Figure 4-8: Building Inventory Affected by the EF4 Tornado in Hume and Metcalf



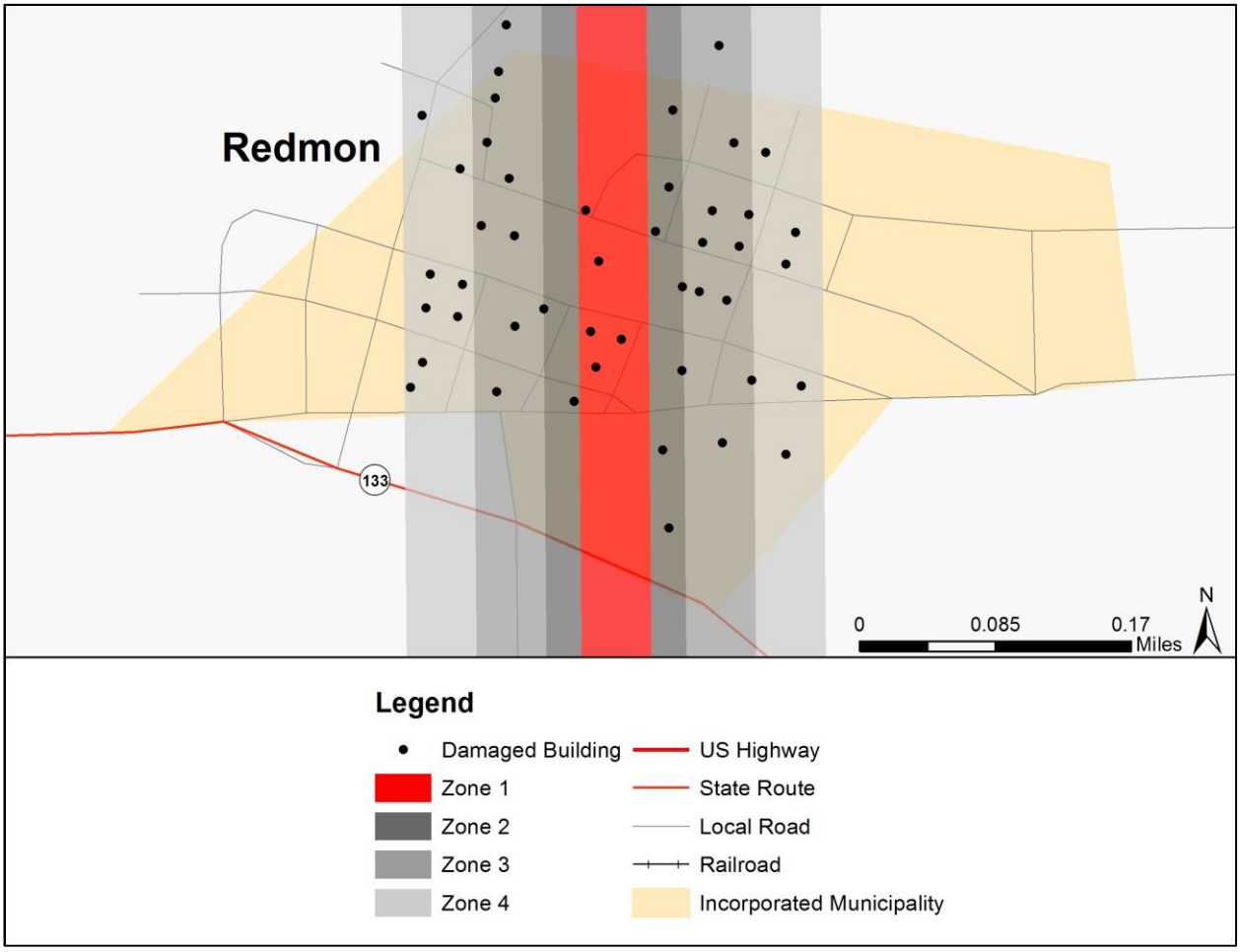
Modeled Impacts of a F4 Tornado in Redmon, IL

Table 4-16 and Figure 4-9 show the results of the tornado analysis for Redmon, IL. The GIS analysis estimates that the modeled tornado would damage 48 buildings, which is approximately 55% of the total buildings in Redmon. The estimated building losses are over $2,800,000. The building losses are an estimate of building replacement costs multiplied by the damage percent.

Table 4-16: Estimated Building Losses by Occupancy Type (x $1000) in Redmon

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$377	$990	$1,010	$159
Commercial	$174	$26	$99	$0
Industrial	$0	$0	$0	$0
Agriculture	$0	$0	$0	$0
Religious	$0	$0	$0	$0
Government	$0	$0	$0	$0
Education	$0	$0	$0	$0
Total:	**$551**	**$1,016**	**$1,109**	**$159**

Figure 4-9: Building Inventory Affected by the EF4 Tornado in Redmon



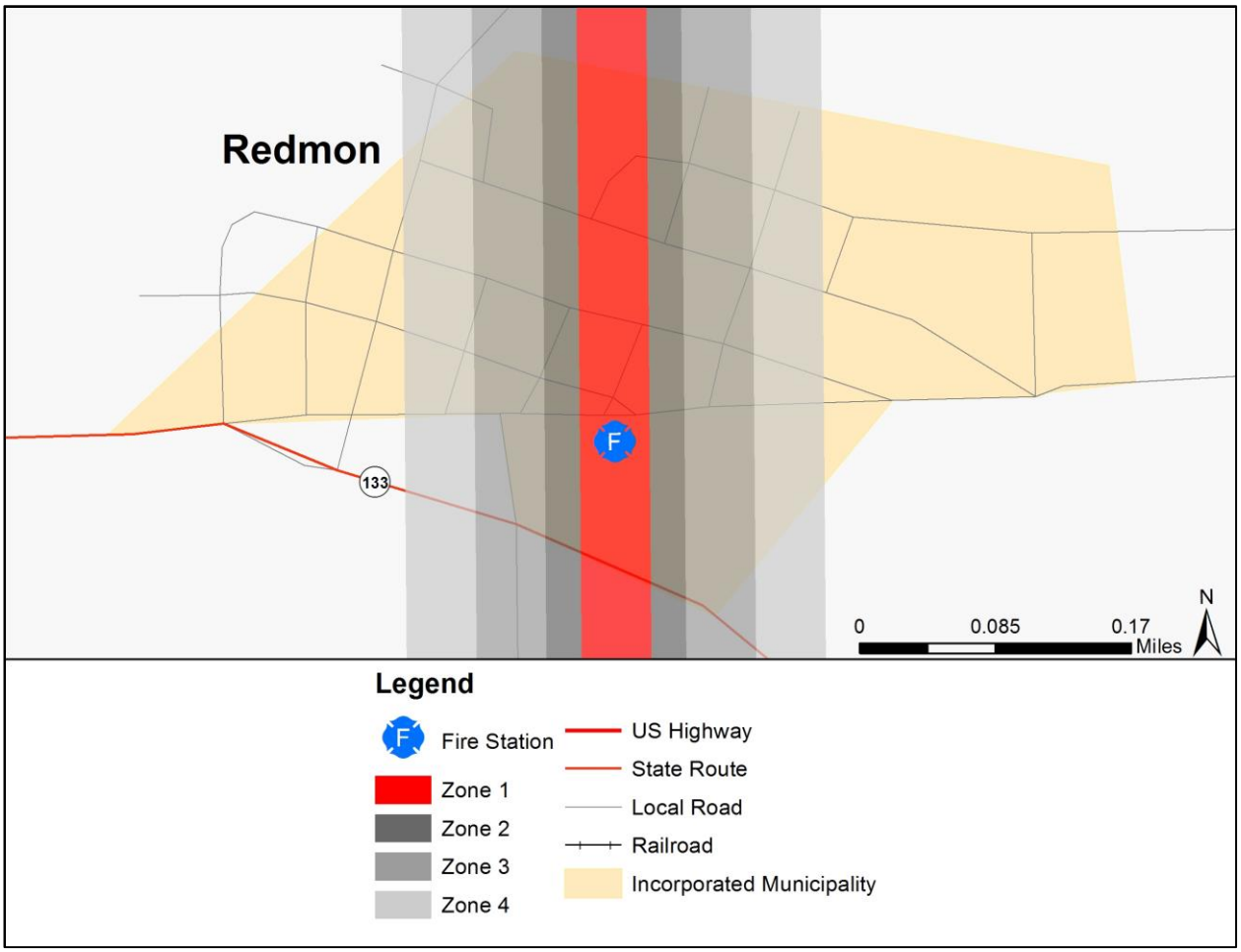
Essential Facilities Damage

There is one essential facility located within 900 feet of the hypothetical tornado path in Redmon. No essential facilities are located within 900 feet of the hypothetical tornado path in Hume or Metcalf. Table 4-17 identifies the affected facilities, and Figure 4-10 shows their geographic locations.

Table 4-17: Essential Facilities Affected by the F4 Tornado in Redmon

Essential Facility	Facility Name
Fire Stations	Paris Community FPD - Redmon

Figure 4-10: Essential Facilities Affected by the EF4 Tornado in Redmon



Vulnerability to Future Assets/Infrastructure for Tornado Hazard

The entire population and all buildings are at risk because tornadoes can occur anywhere within the state, at any time. Furthermore, any future development in terms of new construction within the county is at risk. Table 4-10 includes the building exposure for Edgar County.

All critical facilities in the county are at risk. Appendices E and F include a list and map of all critical facilities in Edgar County.

Suggestions for Community Development Trends

Local officials will enhance severe storm preparedness if they sponsor a wide range of programs and initiatives to address the overall safety of county residents. The county needs to build new structures with more sturdy construction, and harden existing structures to lessen the potential impacts of severe weather. Building more warning sirens will warn the community of approaching storms to ensure the safety of Edgar County residents.

4.4.2 Flood Hazard

Hazard Definition for Flooding

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the magnitude and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. SIU classifies floods as one of two types in this plan: upstream floods or downstream floods. Both types of floods are common in Illinois.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause severe damage over relatively localized areas. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can result from inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at any time of the year in Illinois, but they are most common in the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Previous Occurrences of Flooding

The NCDC database reported 25 flood events in Edgar County since 1998. The two most significant flood events occurred in 2002 and 2008. On 05/07/2002, flash flooding inundated many rural roads, collapsed a 76-foot bridge south of Paris, IL, and resulted in approximately $485,000 in damages. On 06/04/2008, approximately 8 inches of rain fell over the county in three rain events across four days, impacting approximately 200 homes and resulting in approximately $700,000 in damages.

Table 4-18 identifies NCDC-recorded floods that caused damage, death, or injury in Edgar County. Additional details of individual hazard events are on the NCDC website.

Table 4-18: NCDC-Recorded Floods that Caused Damage, Death, or Injury in Edgar County

Location or County*	Date	Deaths	Injuries	Property Damage (x $1000)	Crop Damage (x $1000)
Palermo	6/4/2008	0	0	700	0
Edgar	5/7/2002	0	0	485	0
	Total:	**0**	**0**	**1185**	**0**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Repetitive Loss Properties

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP that has suffered flood loss damage on two or more occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is ≥ 25% of the market value of the structure at the time of each flood loss. Edgar County has no repetitive loss structures.

Geographic Location for Flooding

Most flooding in Illinois occurs in the spring to early summer because of excessive rainfall and/or snowmelt. Severe thunderstorms may cause flooding during the summer or fall, but are often localized. Sugar Creek, Brouilletts Creek, and the Brushy Fork of the Embarrass River are the primary sources of river flooding in Edgar County. Flash floods, brief heavy flows in small streams or normally dry creek beds, also occur within the county.

The 2010 Preliminary Digital Flood Insurance Rate Map (DFIRM) identified specific stream reaches for analysis. The map in Appendix D depicts areas of riverine flooding.

NOAA's Advanced Hydrologic Prediction Service provides information from stream gauges at points along various rivers across the United States. There are eight USGS stream gauges located in Edgar County.

Hazard Extent for Flooding

All floodplains are susceptible to flooding in Edgar County. The floodplain of concern is for the 100-year flood event, shown in Figure 4-11. However, flooding is dependent on various local factors including, but not limited to, impervious surfaces, amount of precipitation, river-training structures, etc.

Risk Identification for Flood Hazard

Based on historical information, future occurrence of flooding in Edgar County is probable. According to the Risk Priority Index (RPI), flooding is ranked as the number two hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
4	x	4	=	16

Critical Facilities

All critical facilities within the floodplain are vulnerable to floods. An essential facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility, and loss of facility functionality (e.g., a damaged police station cannot serve the community). Appendices E and F include a list and map of all critical facilities in Edgar County.

Infrastructure

The types of infrastructure potentially impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that a flood could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Flood Analysis Using User-Defined Building Inventory

SIU used Hazus-MH to generate the flood depth grid for a 100-year return period and made calculations by clipping the USGS one-third-arc-second DEM (~10 m) to the flood boundary. Next, SIU used Hazus-MH to estimate the damages for Edgar County by utilizing a detailed building inventory database created from assessor and parcel data. According to this analysis, there are 29 buildings located in the Edgar County 100-year floodplain. The estimated damage to these structures is $1,665,000. Figure 4-11 depicts the building inventory within the 100-year floodplain and Table 4-19 shows the loss estimates by occupancy class.

Figure 4-11: Edgar County 100-Year Floodplain Boundary

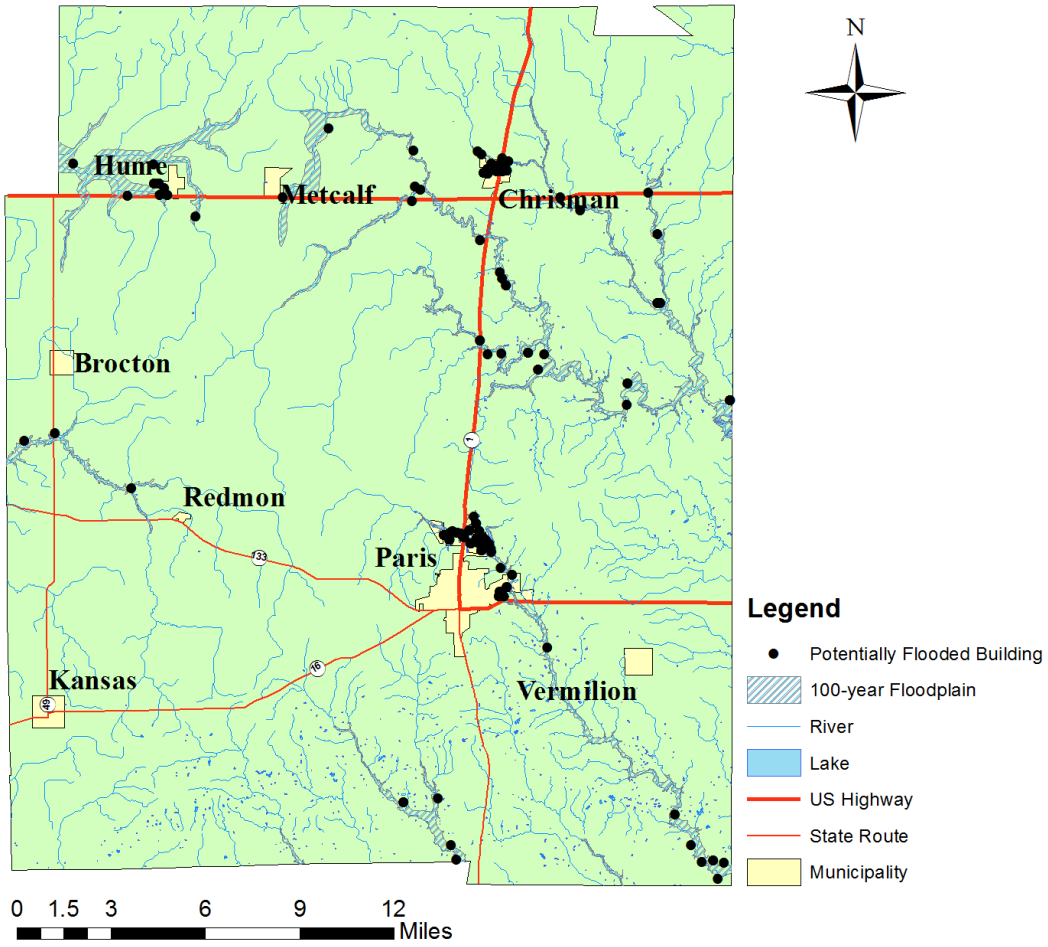


Table 4-19: Estimated Flood Losses within the 100-year Floodplain

Occupancy Class	Number of Structures	Estimated Building Related Losses (x $1000)
Residential	29	1,665
Agricultural	0	0
Commercial	0	0
Industrial	0	0
Religious/Non Profit	0	0
Government	0	0
Total:	**29**	**1,665**

Critical Facilities Damage
The analysis identified no critical facilities that are subject to flooding.

Vulnerability Analysis for Flash Flooding
Flash flooding could affect any low-lying location or areas of poor drainage within the county; therefore, a significant portion of the county's population and buildings are vulnerable to a flash flood. These structures can expect the same impacts as discussed in a riverine flood.

Appendices E and F include a list and map of all critical facilities in Edgar County.

Suggestions for Community Development Trends
Reducing floodplain development is crucial to reducing flood-related damages. Areas with recent development may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible to drainage issues. Damage to these can cause back-up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.4.3 Hazardous Materials Storage and Transportation Hazard

Hazard Definition
Illinois has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances across county and state lines every day. Transporting chemicals and substances along interstate routes is commonplace in Illinois. The rural areas of Illinois have considerable agricultural commerce, meaning transportation of fertilizers, herbicides, and pesticides is common on rural roads. These factors increase the chance of hazardous material releases and spills throughout the state of Illinois.

The release or spill of certain substances can cause an explosion. Explosions result from the ignition of volatile products such as petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. An explosion can potentially cause death, injury, and property damage. In addition, a fire routinely follows an explosion, which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences of Hazardous Materials Storage and Transportation Hazard
Edgar County has not experienced a significantly large-scale hazardous material incident at a fixed site or during transport resulting in multiple deaths or serious injuries. Minor releases have put local firefighters, hazardous materials teams, emergency management, and local law enforcement into action to try to stabilize these incidents and prevent or lessen harm to Edgar County residents.

Geographic Location of Hazardous Materials Storage and Transportation Hazard
Hazardous material hazards are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge.

Hazard Extent of Hazardous Materials Storage and Transportation Hazard
The extent of the hazardous material hazard varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification of Hazardous Materials Storage and Transportation Hazard
Based on input from the planning team, the occurrence of a hazardous materials accident is likely. According to the RPI, "hazardous materials storage and transport" ranked as the number three hazard in Edgar County.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
3	x	4	=	12

Vulnerability Analysis for Hazardous Materials Storage and Transportation Hazard

The entire county is vulnerable to a hazardous material release and can expect impacts within the affected area. The main concern during a release or spill is the affected population. Table 4-10 includes the building exposure for Edgar County, as determined from building inventory. This plan will therefore consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities and communities within the county are at risk. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g., a damaged police station can no longer serve the community). Table 4-9 lists the types and numbers of all essential facilities in the area. Appendices E and F include a list and map of all critical facilities.

Building Inventory

Table 4-10 includes the building exposure including types and numbers of buildings for the entire county. Buildings within the county can expect impacts similar to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris, and loss of function of the building (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure

During a hazardous material release, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan, it is important to emphasize that a hazardous materials release could damage any number of these items. The impacts to these items include: broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); and railway failure from broken or impassable railways. Bridges could become impassable causing risk to motorists.

ALOHA Hazardous Chemical Release Analysis

SIU used the U.S. Environmental Protection Agency's ALOHA (Areal Locations of Hazardous Atmospheres) model to assess the impacted area for: ammonia release in Kansas, Paris, and the intersection of highways 49 and 36 east of Hume; propane release in Chrisman; and chlorine release in Paris. The Edgar County planning team chose the Kansas, Chrisman, and Paris (ammonia) scenarios because bulk chemical plants are present in those communities; the planning team chose the highway 49 and 36 scenario and the Paris (chlorine) scenario because of significant rail and truck traffic along major transportation routes within a relatively densely populated area.

Ammonia is a clear colorless gas with a strong odor. Ammonia is shipped as a liquid under its own vapor pressure. The density of liquid ammonia is 6 lb/gal. Contact with the unconfined liquid can cause frostbite. Gas is generally regarded as nonflammable but does burn within certain vapor concentration limits and with strong ignition. Fire hazard increases in the presence of oil or other combustible materials. Although gas is lighter than air, vapors from a leak initially hug the ground. Prolonged exposure of containers to fire or heat may cause violent rupturing and rocketing. Long-term inhalation of low concentrations of the vapors or short-term inhalation of high concentrations have adverse health effects. Used as a fertilizer, as a refrigerant, and in the manufacture of other chemicals (NOAA Reactivity, 2007).

SOURCE: http://cameochemicals.noaa.gov/chemical/4860

Chlorine is a greenish yellow gas with a pungent to suffocating odor. The gas liquefies above -35°C at ambient pressure and will liquefy from pressure applied at room temperature. Contact with unconfined liquid chlorine can cause frostbite from evaporative cooling. Chlorine does not burn but, like oxygen, supports combustion. The toxic gas can have adverse health effects from either long-term inhalation of low concentrations of vapors or short-term inhalation of high concentrations. Chlorine vapors are much heavier than air and tend to settle in low areas. Chlorine is commonly used to purify water, bleach wood pulp, and make other chemicals (NOAA Reactivity 2007).

SOURCE: http://cameochemicals.noaa.gov/chemical/2862

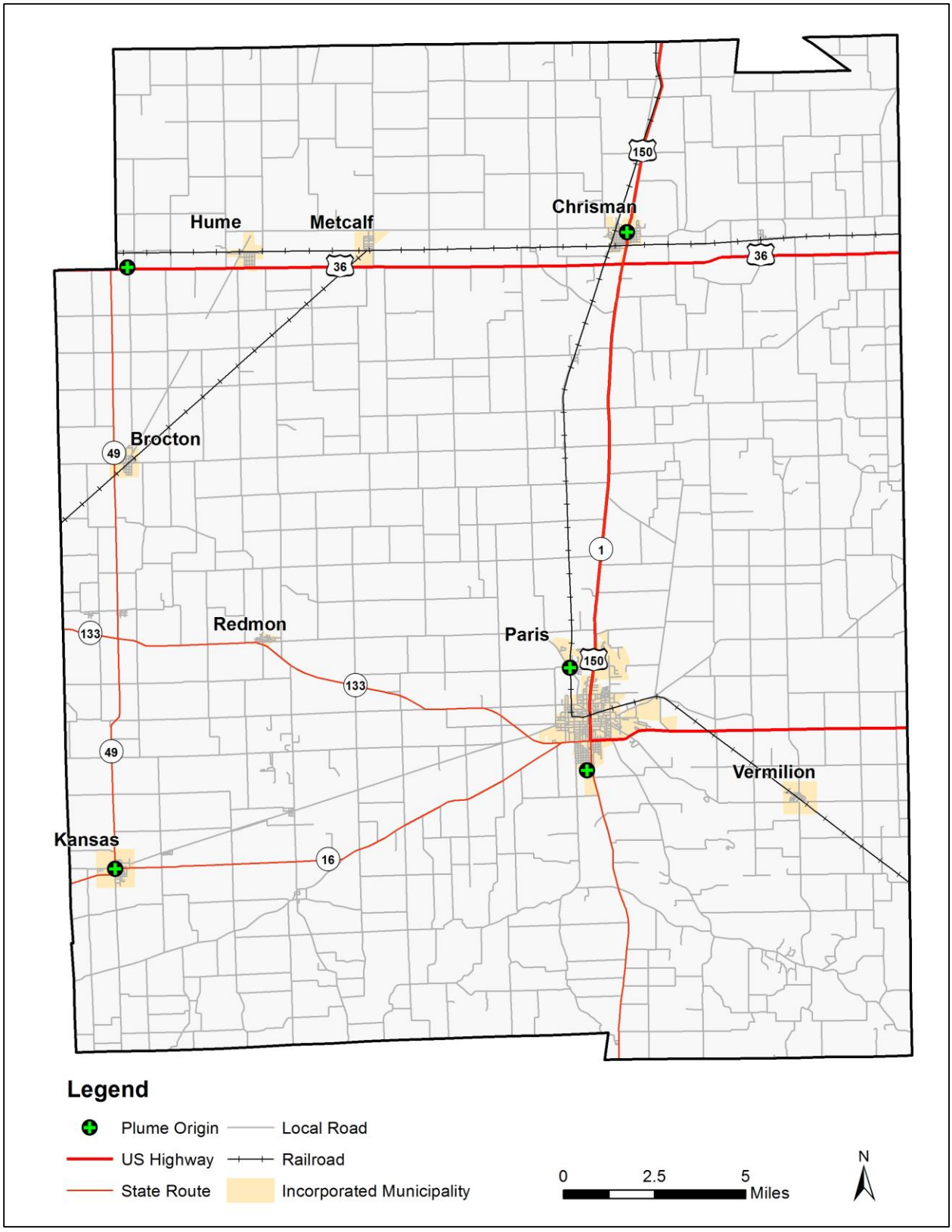
Propane is a colorless gas with a faint petroleum-like odor. It is shipped as a liquefied gas under its vapor pressure. It may be stenched for transportation. Contact with the unconfined liquid can cause frostbite by evaporative cooling. Propane is easily ignited. The vapors are heavier than air and a flame can flash back to the source of leak very easily. The leak may be either a liquid or vapor leak. The vapors can asphyxiate by the displacement of air. Under prolonged exposure to fire or heat the containers may rupture violently and rocket.

SOURCE: http://cameochemicals.noaa.gov/chemical/9018

ALOHA is a computer program designed for response to chemical accidents, as well as emergency planning and training. Ammonia, chlorine, and propane are common chemicals used in industrial operations and are found in either liquid or gas form. Rail and truck tankers haul ammonia, chlorine, and propane to and from facilities.

For the Kansas, Chrisman, Paris (ammonia), and highways 49 and 36 scenarios, SIU assumed average atmospheric and climatic conditions for the spring season with a breeze from the south-southwest. For the Paris (chlorine) scenario, SIU assumed average atmospheric and climatic conditions for the fall season with a breeze from the south-southwest. SIU considered seasonal conditions among analyses upon the request of the planning team. Figures 4-12 depicts the plume origins of the three modeled hazardous chemical releases in Edgar County.

Figure 4-12: ALOHA Modeled Hazardous Chemical Plume Origins in Edgar County



Analysis Parameters for Kansas Ammonia Release

The ALOHA atmospheric modeling parameters for the Kansas ammonia release, depicted in Figure 4-13, were based upon a north-northeasterly wind speed of 13 miles per hour. The temperature was 73°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of April reported from NOAA for wind direction, wind speed, and temperature to simulate spring conditions, as requested by the planning team.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The ammonia in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 8,090 pounds of material per minute. Figure 4-14 depicts the plume footprint generated by ALOHA.

Figure 4-13: ALOHA Modeling Parameters for Ammonia Release in Kansas

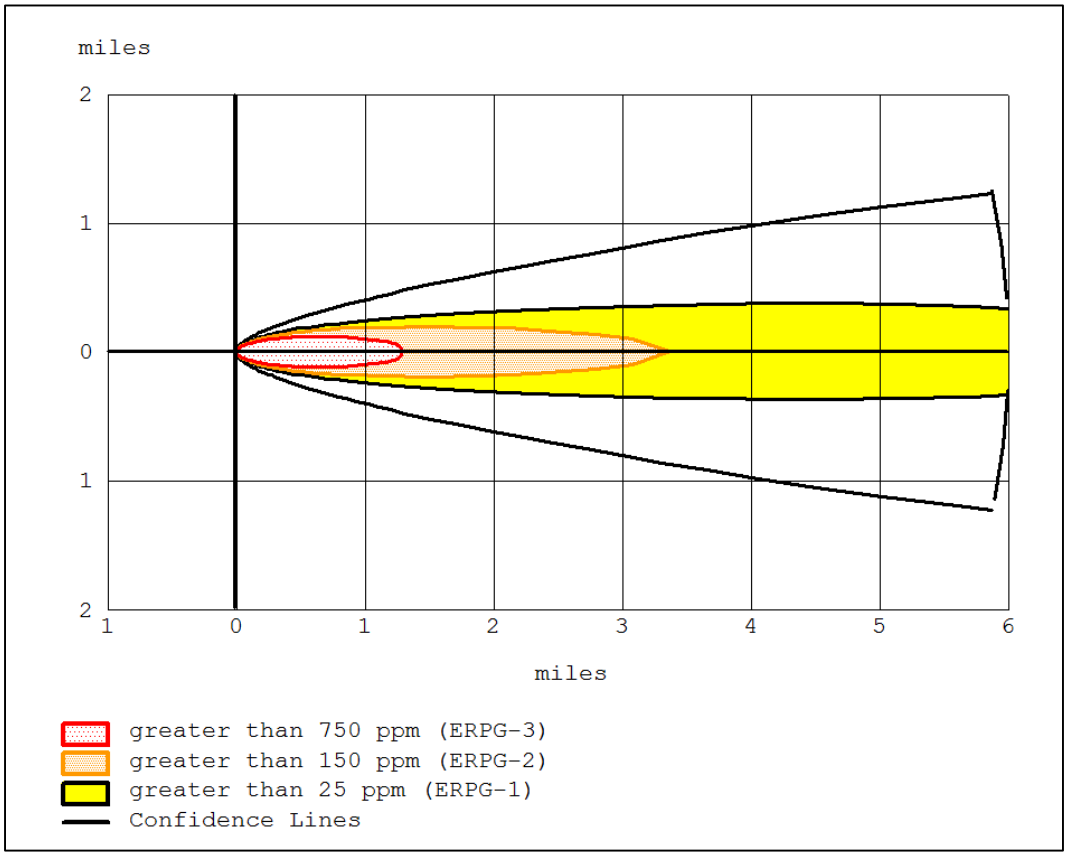
```
SITE DATA:
  Location: KANSAS, ILLINOIS
  Building Air Exchanges Per Hour: 0.74 (sheltered single storied)
  Time: April 8, 2013  1354 hours CDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: AMMONIA                  Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm   AEGL-2 (60 min): 160 ppm   AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm      LEL: 150000 ppm      UEL: 280000 ppm
  Ambient Boiling Point: -29.1° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 13 miles/hour from SSW at 10 meters
  Ground Roughness: open country          Cloud Cover: 5 tenths
  Air Temperature: 73° F                  Stability Class: D
  No Inversion Height                     Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Flammable chemical escaping from tank (not burning)
  Tank Diameter: 8 feet                   Tank Length: 33 feet
  Tank Volume: 12,408 gallons
  Tank contains liquid                    Internal Temperature: 73° F
  Chemical Mass in Tank: 23.6 tons        Tank is 75% full
  Circular Opening Diameter: 2.5 inches
  Opening is 12 inches from tank bottom
  Release Duration: 9 minutes
  Max Average Sustained Release Rate: 8,090 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 43,739 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).
```

Figure 4-14: ALOHA Generated Plume Footprint of Kansas Ammonia Release



Analysis Parameters for Paris Ammonia Release

The ALOHA atmospheric modeling parameters for the Paris ammonia release, depicted in Figure 4-15, were based upon a north-northeasterly wind speed of 13 miles per hour. The temperature was 73°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of April reported from NOAA for wind direction, wind speed, and temperature to simulate spring conditions, as requested by the planning team.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The ammonia in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 8,090 pounds of material per minute. Figure 4-16 depicts the plume footprint generated by ALOHA.

Figure 4-15: ALOHA Modeling Parameters for Ammonia Release in Paris

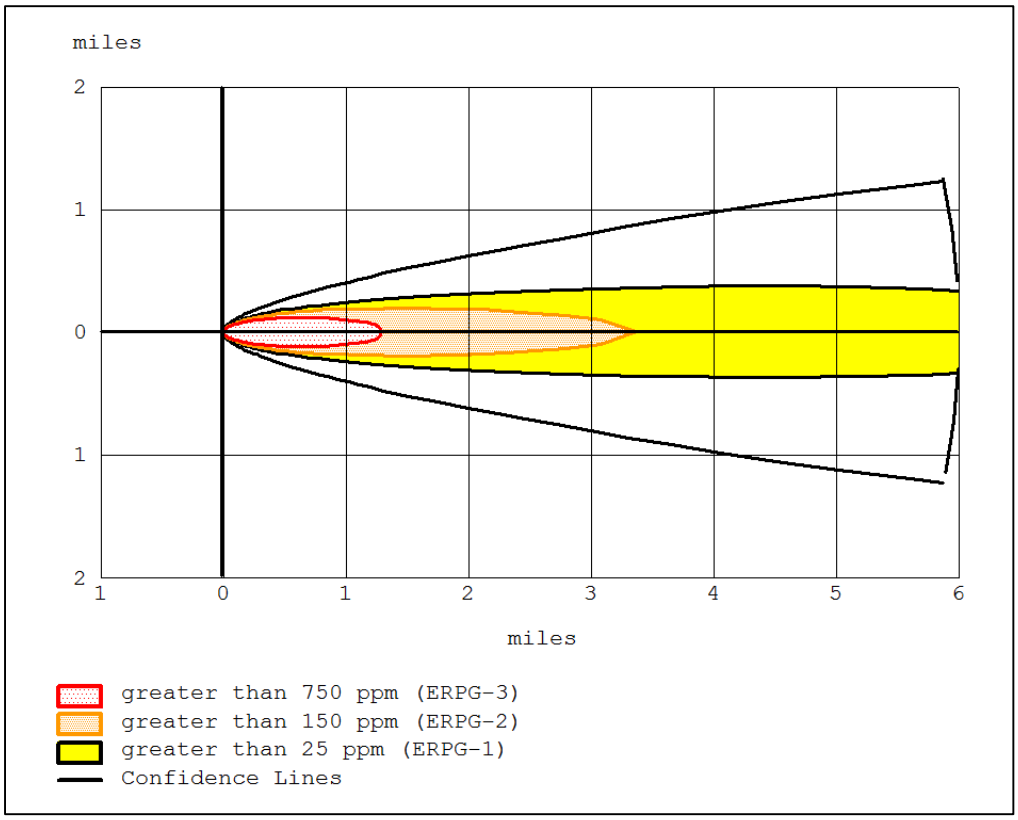
```
SITE DATA:
  Location: PARIS-SOUTH, ILLINOIS
  Building Air Exchanges Per Hour: 0.74 (sheltered single storied)
  Time: April 8, 2013  1402 hours CDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: AMMONIA                  Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm   AEGL-2 (60 min): 160 ppm   AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm      LEL: 150000 ppm      UEL: 280000 ppm
  Ambient Boiling Point: -29.1° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 13 miles/hour from SSW at 10 meters
  Ground Roughness: open country          Cloud Cover: 5 tenths
  Air Temperature: 73° F                  Stability Class: D
  No Inversion Height                     Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Flammable chemical escaping from tank (not burning)
  Tank Diameter: 8 feet                   Tank Length: 33 feet
  Tank Volume: 12,408 gallons
  Tank contains liquid                    Internal Temperature: 73° F
  Chemical Mass in Tank: 23.6 tons        Tank is 75% full
  Circular Opening Diameter: 2.5 inches
  Opening is 12 inches from tank bottom
  Release Duration: 9 minutes
  Max Average Sustained Release Rate: 8,090 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 43,739 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).
```

Figure 4-16: ALOHA Generated Plume Footprint of Paris Ammonia Release



Analysis Parameters for Intersection of Highways 49 and 36 Ammonia Release

The ALOHA atmospheric modeling parameters for the intersection of Highways 49 and 36 ammonia release, depicted in Figure 4-17, were based upon a north-northeasterly wind speed of 13 miles per hour. The temperature was 73°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of April reported from NOAA for wind direction, wind speed, and temperature to simulate spring conditions, as requested by the planning team.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The ammonia in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 8,090 pounds of material per minute. Figure 4-18 depicts the plume footprint generated by ALOHA.

Figure 4-17: ALOHA Modeling Parameters for Ammonia Release at Highways 49 and 36

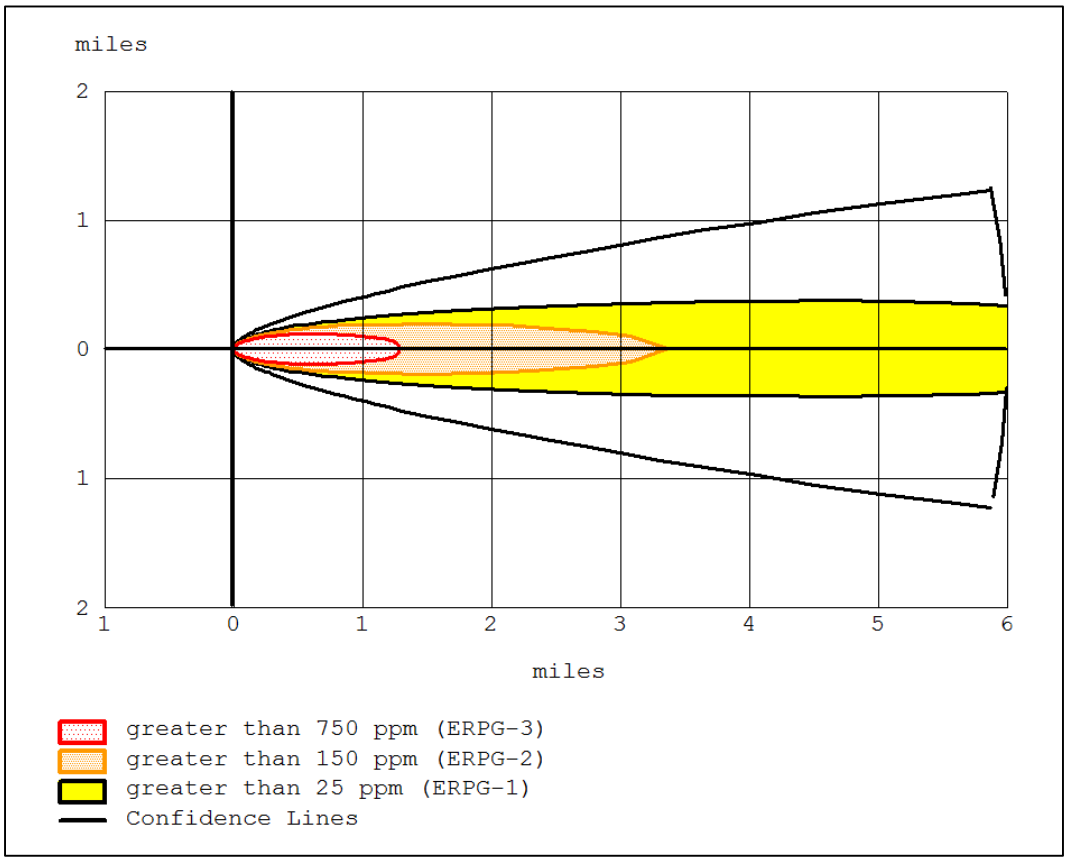
```
SITE DATA:
  Location: HIGHWAYS 46 & 36, ILLINOIS
  Building Air Exchanges Per Hour: 0.74 (sheltered single storied)
  Time: April 8, 2013  1405 hours CDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: AMMONIA                  Molecular Weight: 17.03 g/mol
  AEGL-1 (60 min): 30 ppm   AEGL-2 (60 min): 160 ppm   AEGL-3 (60 min): 1100 ppm
  IDLH: 300 ppm      LEL: 150000 ppm      UEL: 280000 ppm
  Ambient Boiling Point: -29.0° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 13 miles/hour from SSW at 10 meters
  Ground Roughness: open country          Cloud Cover: 5 tenths
  Air Temperature: 73° F                  Stability Class: D
  No Inversion Height                     Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Flammable chemical escaping from tank (not burning)
  Tank Diameter: 8 feet                   Tank Length: 33 feet
  Tank Volume: 12,408 gallons
  Tank contains liquid                    Internal Temperature: 73° F
  Chemical Mass in Tank: 23.6 tons        Tank is 75% full
  Circular Opening Diameter: 2.5 inches
  Opening is 12 inches from tank bottom
  Release Duration: 9 minutes
  Max Average Sustained Release Rate: 8,090 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 43,739 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).
```

Figure 4-18: ALOHA Generated Plume Footprint of Highways 49 and 36 Ammonia Release



Analysis Parameters for Chrisman Propane Release

The ALOHA atmospheric modeling parameters for the Chrisman propane release, depicted in Figure 4-19, were based upon a north-northeasterly wind speed of 13 miles per hour. The temperature was 73°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of April reported from NOAA for wind direction, wind speed, and temperature to simulate spring conditions, as requested by the planning team.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The propane in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 7,140 pounds of material per minute. Figure 4-20 depicts the plume footprint generated by ALOHA.

Figure 4-19: ALOHA Modeling Parameters for Propane Release in Chrisman

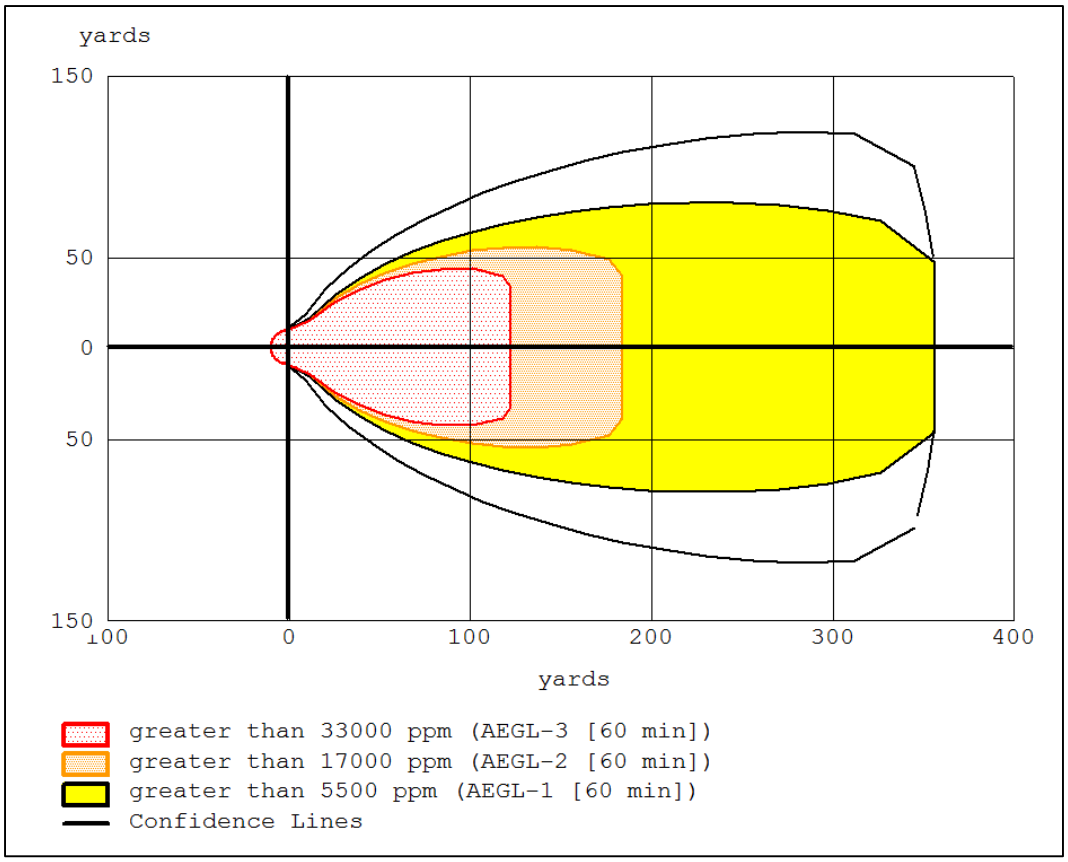
```
SITE DATA:
  Location: CHRISMAN, ILLINOIS
  Building Air Exchanges Per Hour: 0.74 (sheltered single storied)
  Time: April 8, 2013  1400 hours CDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: PROPANE                  Molecular Weight: 44.10 g/mol
  AEGL-1 (60 min): 5500 ppm   AEGL-2 (60 min): 17000 ppm   AEGL-3 (60 min): 33000 ppm
  IDLH: 2100 ppm     LEL: 21000 ppm       UEL: 95000 ppm
  Ambient Boiling Point: -44.7° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 13 miles/hour from SSW at 10 meters
  Ground Roughness: open country          Cloud Cover: 5 tenths
  Air Temperature: 73° F                  Stability Class: D
  No Inversion Height                     Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Flammable chemical escaping from tank (not burning)
  Tank Diameter: 8 feet                   Tank Length: 33 feet
  Tank Volume: 12,408 gallons
  Tank contains liquid                    Internal Temperature: 73° F
  Chemical Mass in Tank: 19.5 tons        Tank is 75% full
  Circular Opening Diameter: 2.5 inches
  Opening is 12 inches from tank bottom
  Release Duration: 10 minutes
  Max Average Sustained Release Rate: 7,140 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 38,740 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).
```

Figure 4-20: ALOHA Generated Plume Footprint of Chrisman Propane Release



Analysis Parameters for Paris Chlorine Release

The ALOHA atmospheric modeling parameters for the Paris chlorine release, depicted in Figure 4-21, were based upon a north-northeasterly wind speed of 10.1 miles per hour. The temperature was 66°F with 75% humidity and a cloud cover of five-tenths skies. SIU used average weather conditions for the month of October reported from NOAA for wind direction, wind speed, and temperature to simulate fall conditions, as requested by the planning team.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 8 feet and the length set to 33 feet (12,408 gallons). At the time of its release, it was estimated that the tank was 75% full. The chlorine in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to these ALOHA parameters, this scenario would release approximately 10,200 pounds of material per minute. Figure 4-22 depicts the plume footprint generated by ALOHA.

Figure 4-21: ALOHA Modeling Parameters for Paris Chlorine Release

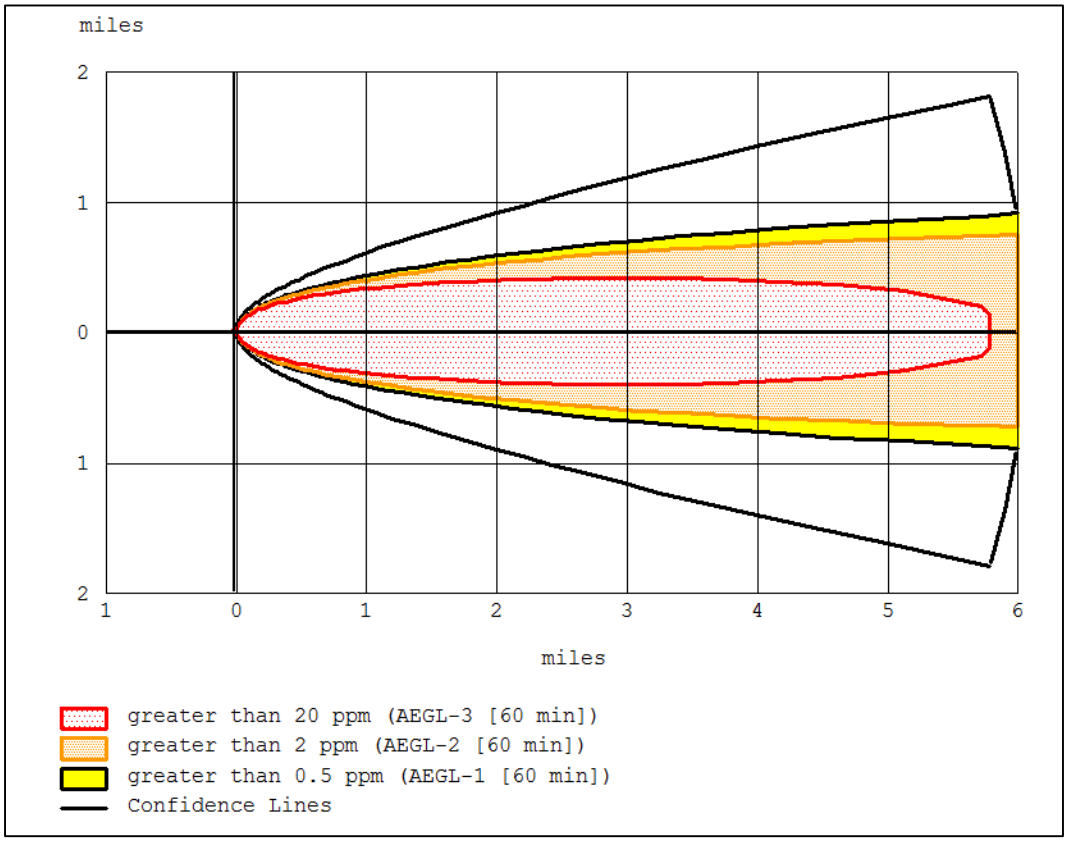
```
SITE DATA:
  Location: PARISRR, ILLINOIS
  Building Air Exchanges Per Hour: 0.51 (sheltered single storied)
  Time: April 15, 2013  1955 hours CDT (using computer's clock)

CHEMICAL DATA:
  Chemical Name: CHLORINE                 Molecular Weight: 70.91 g/mol
  AEGL-1 (60 min): 0.5 ppm   AEGL-2 (60 min): 2 ppm   AEGL-3 (60 min): 20 ppm
  IDLH: 10 ppm
  Ambient Boiling Point: -30.3° F
  Vapor Pressure at Ambient Temperature: greater than 1 atm
  Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
  Wind: 10.1 miles/hour from SSW at 10 meters
  Ground Roughness: open country          Cloud Cover: 5 tenths
  Air Temperature: 66° F                  Stability Class: E
  No Inversion Height                     Relative Humidity: 75%

SOURCE STRENGTH:
  Leak from hole in horizontal cylindrical tank
  Non-flammable chemical is escaping from tank
  Tank Diameter: 8 feet                   Tank Length: 33 feet
  Tank Volume: 12,408 gallons
  Tank contains liquid                    Internal Temperature: 66° F
  Chemical Mass in Tank: 55.1 tons        Tank is 75% full
  Circular Opening Diameter: 2.5 inches
  Opening is 12 inches from tank bottom
  Release Duration: 16 minutes
  Max Average Sustained Release Rate: 10,200 pounds/min
     (averaged over a minute or more)
  Total Amount Released: 102,119 pounds
  Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).
```

Figure 4-22: ALOHA Generated Plume Footprint of Paris Chlorine Release



Acute Exposure Guideline Levels (AEGL) are intended to describe the health effects on humans due to once-in-a-lifetime or rare exposure to airborne chemicals. The National Advisory Committee for AEGLs is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills or other catastrophic exposures. As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million (ppm).

- **AEGL 3:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
- **AEGL 2:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape. The orange buffer (≥ 2.0 ppm) extends greater than six miles from the point of release after one hour.
- **AEGL 1:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure. The yellow buffer (≥ 0.5 ppm) extends more than six miles from the point of release after one hour.
- **Confidence Lines**: The dashed lines depict the level of confidence in which the exposure level will be contained. The ALOHA model is 95% confident that the release will stay within this boundary.

Emergency Response Planning Guidelines (ERPG) estimate the concentrations at which most people will begin to experience health effects if they are exposed to a hazardous airborne chemical for one hour. The Emergency Response Planning Committee of the American Industrial Hygiene Association is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills or other catastrophic exposures. As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million (ppm).

- **ERPG 3:** The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing life-threatening health effects. The red buffer (≥750 ppm) extends greater than six miles from the point of release after one hour.
- **ERPG 2:** The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action. The orange buffer (≥ 150 ppm) extends greater than six miles from the point of release after one hour.
- **ERPG 1:** The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing other than mild transient health effects or perceiving a clearly defined, objectionable odor. The yellow buffer (≥ 25 ppm) extends greater than six miles from the point of release after one hour.
- **Confidence Lines**: The dashed lines depict the level of confidence in which the exposure level will be contained. The ALOHA model is 95% confident that the release will stay within this boundary.

  Source: http://response.restoration.noaa.gov/

Results for Ammonia Release Analysis in Kansas

SIU calculated an estimate of property exposed to the ammonia spill in Kansas by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and AEGL 1: ≥ 0.5 ppm). Figure 4-23 depicts the ammonia spill footprint and location of the buildings exposed to the propane spill in Kansas. This GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the ammonia plume are over $8,665,000. Table 4-20 lists building exposure by AEGL zone.

Figure 4-23: ALOHA Plume Footprint Overlaid in ArcGIS for the Kansas Ammonia Release

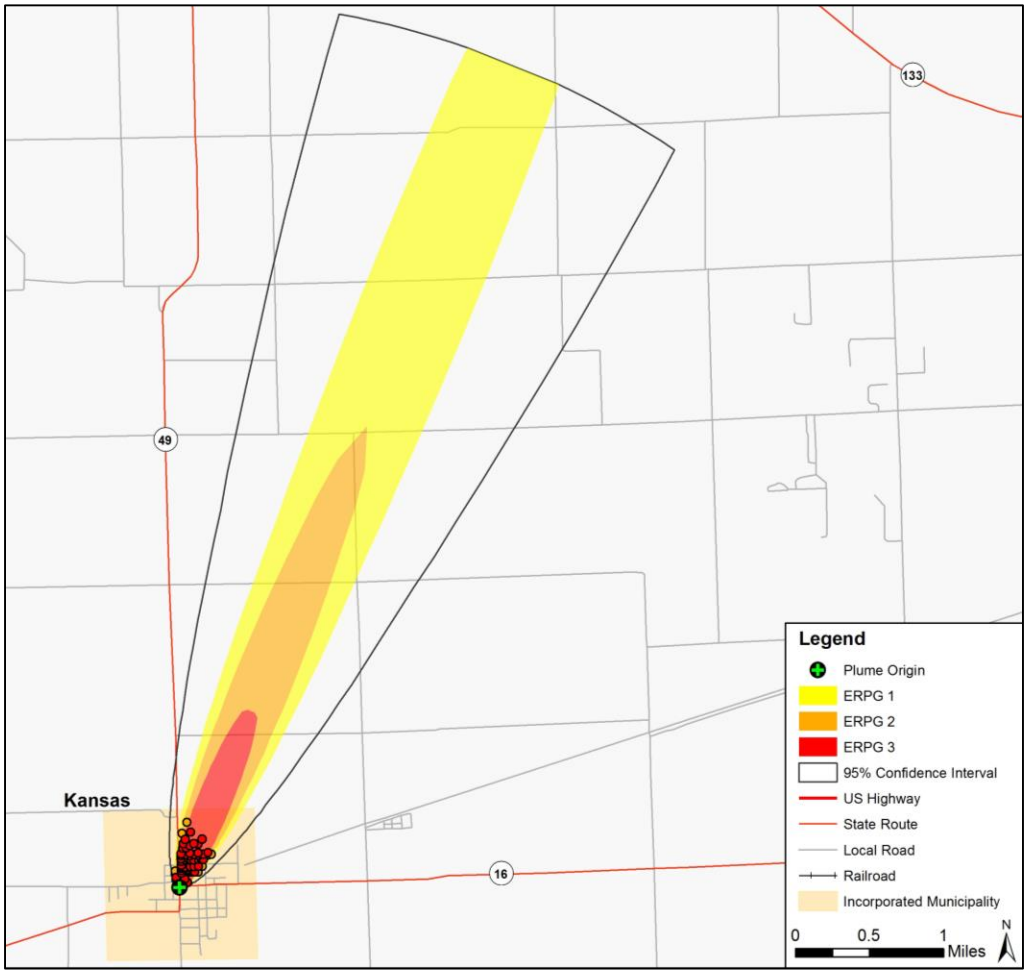


Table 4-20: Estimated Building Exposure for all AEGL Zones (x 1000) as a result of the Kansas Ammonia Release

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Residential	$408	$1,309	$6,114	2	8	42
Commercial	$0	$95	$739	0	1	4
Industrial	$0	$0	$0	0	0	0
Agriculture	$0	$0	$0	0	0	0
Religious	$0	$0	$0	0	0	0
Government	$0	$0	$0	0	0	0
Education	$0	$0	$0	0	0	0
Total:	**$408**	**$1,405**	**$410,695**	**2**	**9**	**46**

Critical Facilities Damage

There are no critical facilities within the limits of the Kansas ammonia scenario.

Results for Ammonia Release Analysis in Paris

SIU calculated an estimate of property exposed to the ammonia spill in Paris by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and AEGL 1: ≥ 0.5 ppm). Figure 4-24 depicts the ammonia spill footprint and location of the buildings exposed to the spill in Paris. This GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the ammonia plume are over $218,587,000. Table 4-21 lists building exposure by AEGL zone.

Figure 4-24: ALOHA Plume Footprint Overlaid in ArcGIS for the Paris Ammonia Release

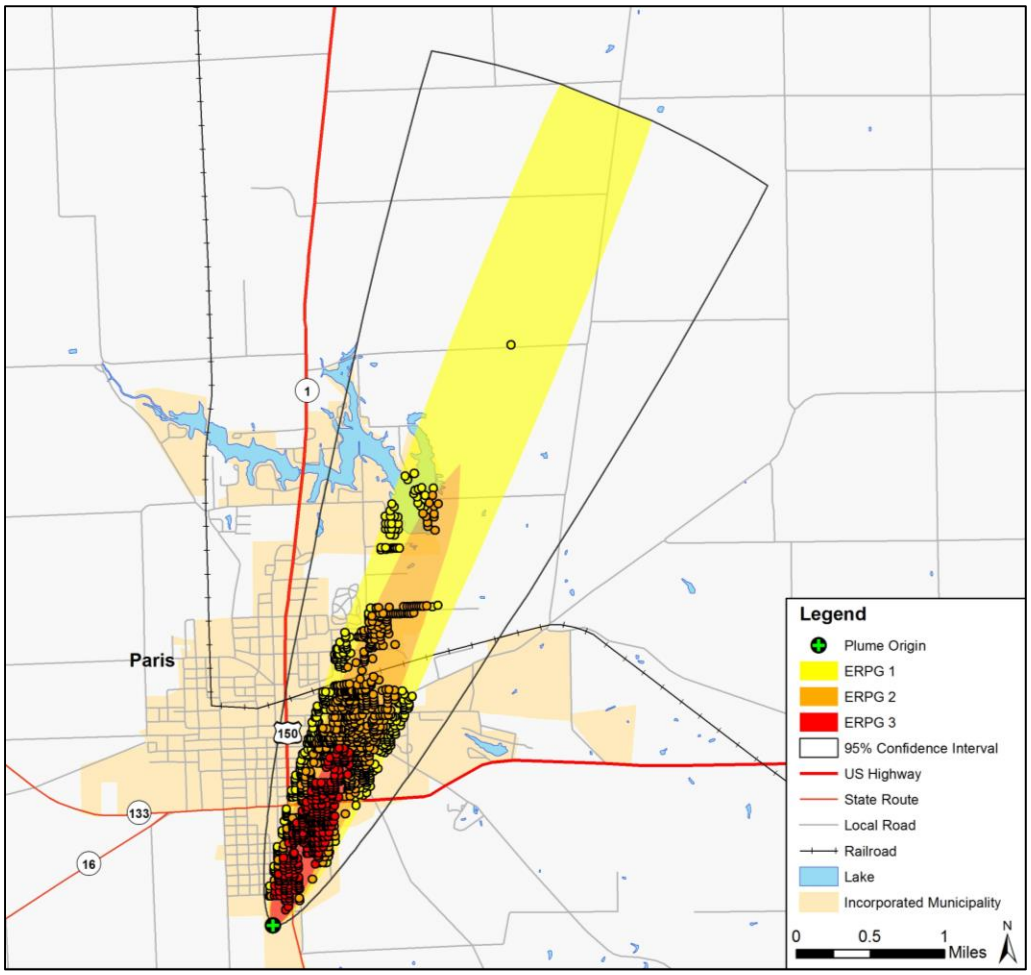


Table 4-21: Estimated Building Exposure for all AEGL Zones (x 1000) as a result of the Paris Ammonia Release

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Residential	$58,915	$97,359	$35,859	291	526	268
Commercial	$6,243	$10,243	$9,968	13	17	32
Industrial	$0	$0	$0	0	0	0
Agriculture	$0	$0	$0	0	0	0
Religious	$0	$0	$0	0	0	0

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Government	$0	$0	$0	0	0	0
Education	$0	$0	$0	0	0	0
Total:	**$57,334**	**$95,416**	**$410,695**	**304**	**543**	**300**

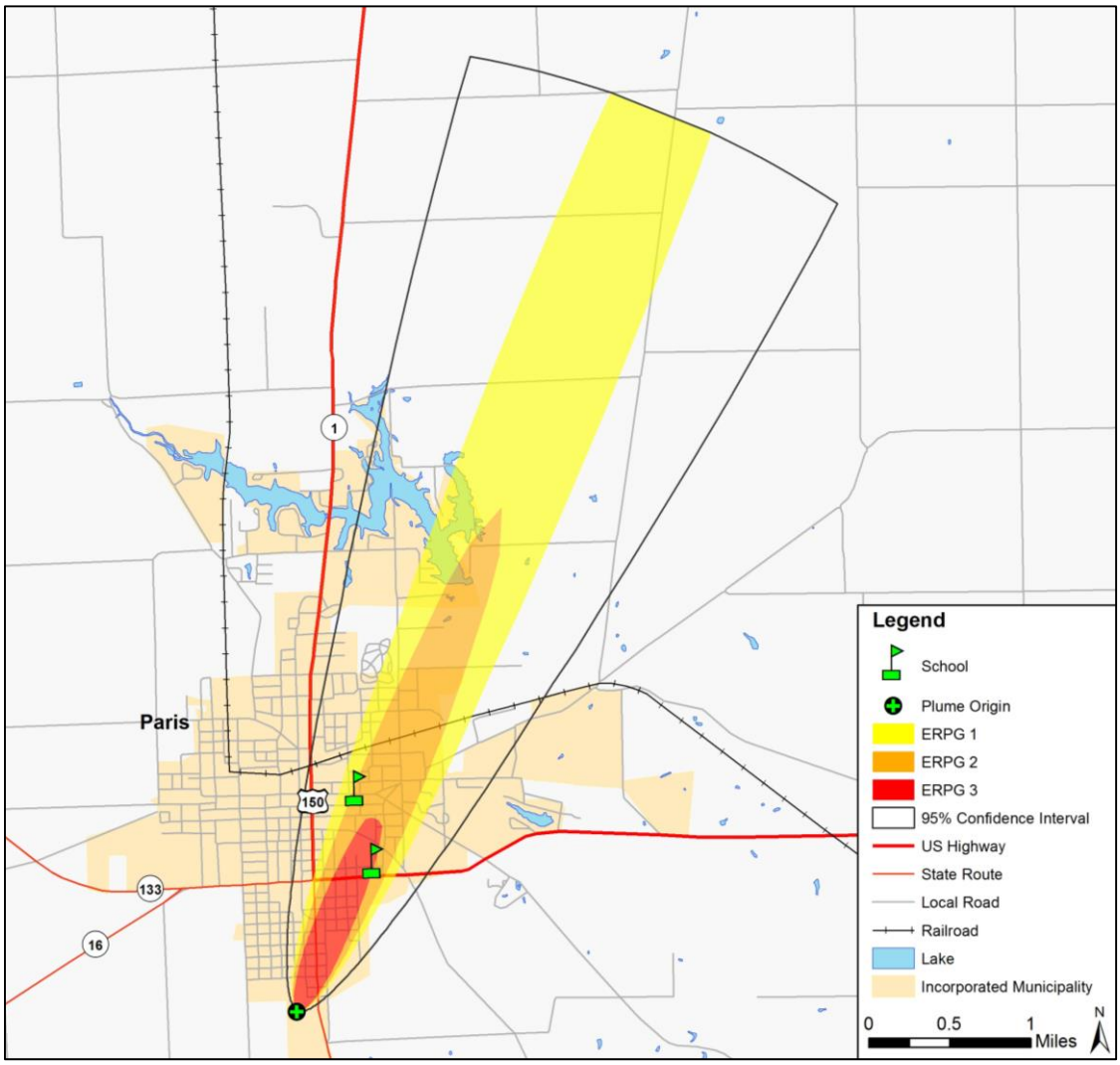
Essential Facilities Damage

There are two essential facilities within the limits of the Paris (ammonia) scenario. Table 4-22 and Figure 4-25 identifies the affected facilities.

Table 4-22: Essential Facilities within the Ammonia Plume Footprint in Paris

Essential Facility	Facility Name
Schools	Mayo Middle School
	Memorial Elementary School

Figure 4-25: Map of Essential Facilities Located within the Ammonia Plume Footprint in Paris



Results for Ammonia Release Analysis at the Intersection of Highways 49 and 36

SIU calculated an estimate of property exposed to the ammonia spill at the intersection of highways 49 and 36 by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and AEGL 1: ≥ 0.5 ppm). Figure 4-26 depicts the ammonia spill footprint and location of buildings exposed to the spill at the intersection of Highway 49 and 36. This GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the ammonia plume are over $164,000. Table 4-23 lists building exposure by AEGL zone.

Figure 4-26: ALOHA Plume Footprint Overlaid in ArcGIS for the Highways 49 and 36 Ammonia Release

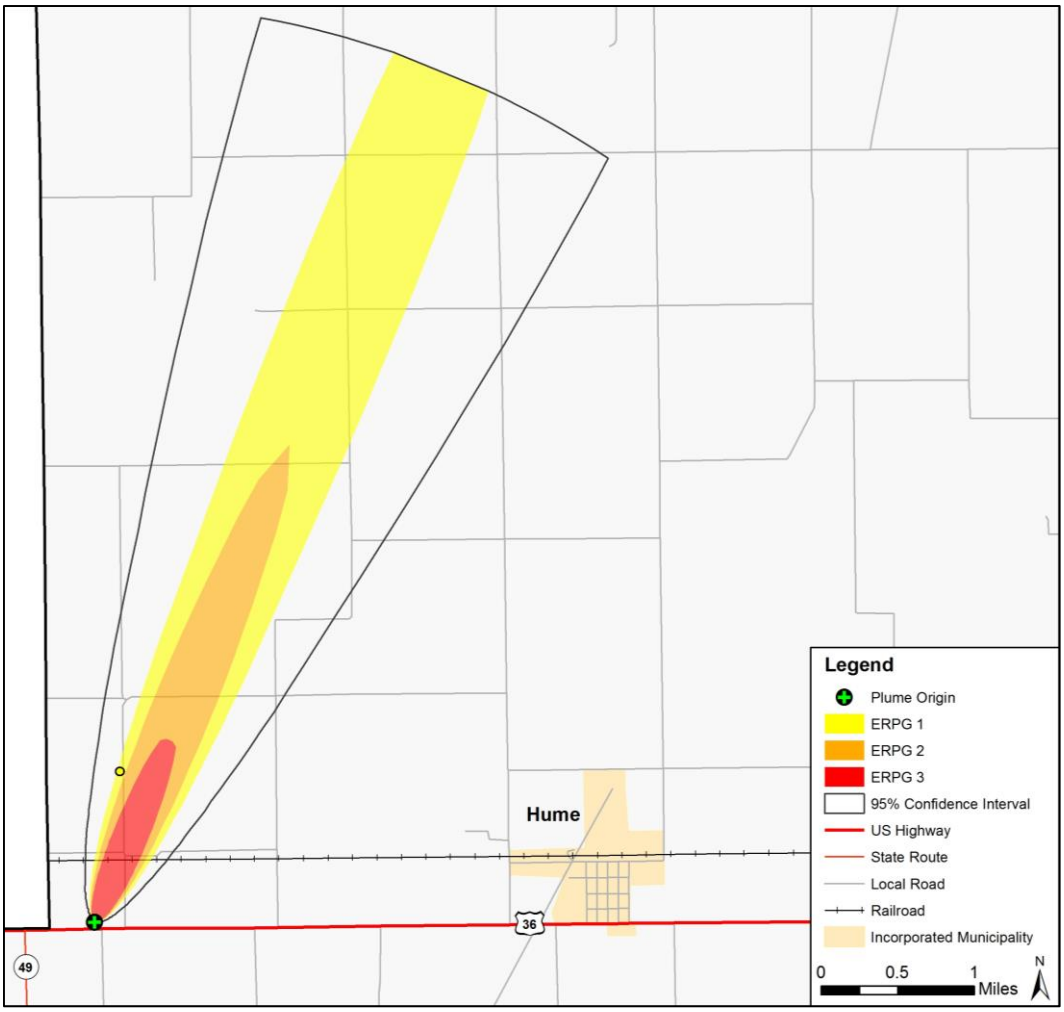


Table 4-23: Estimated Building Exposure for all AEGL Zones (x 1000) as a result of the Highways 49 and 36 Ammonia Release

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Residential	$165	$0	$0	1	0	0
Commercial	$0	$0	$0	0	0	0
Industrial	$0	$0	$0	0	0	0

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Agriculture	$0	$0	$0	0	0	0
Religious	$0	$0	$0	0	0	0
Government	$0	$0	$0	0	0	0
Education	$0	$0	$0	0	0	0
Total:	**$165**	**$0**	**$0**	**1**	**0**	**0**

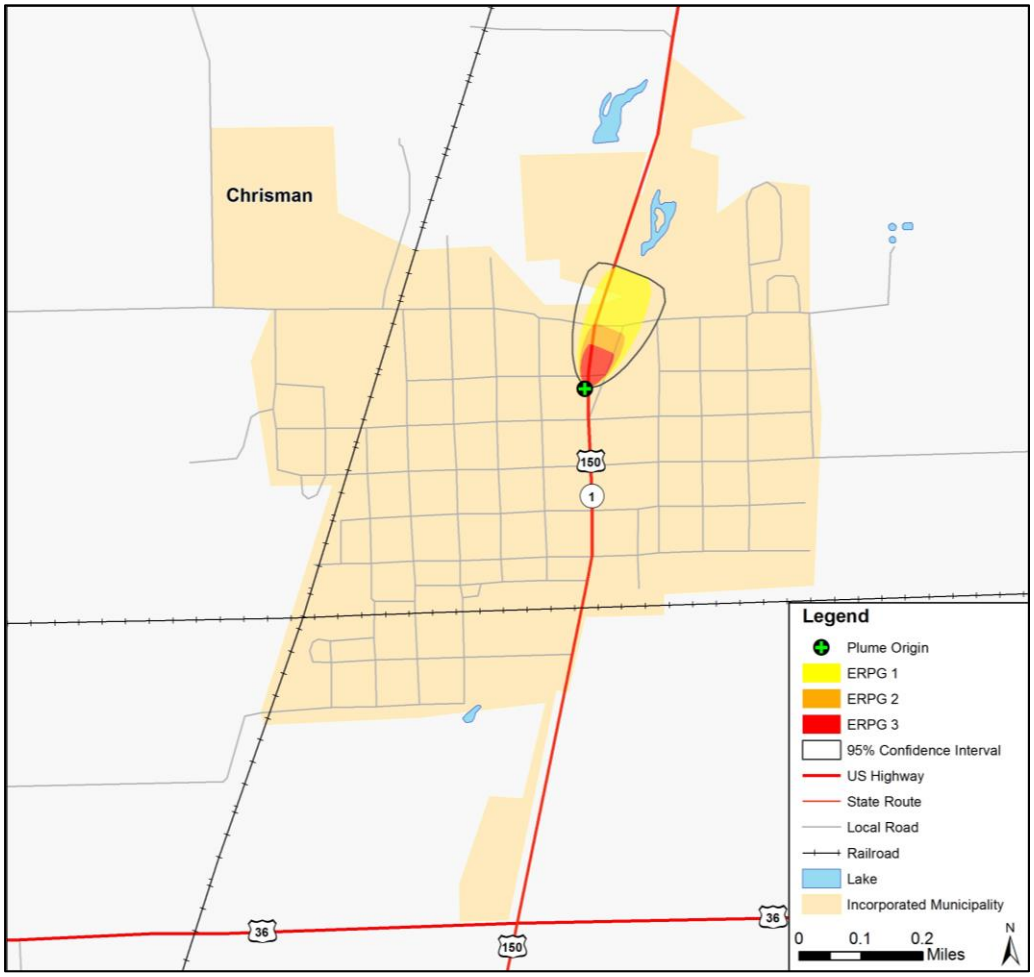
Essential Facilities Damage

There are no essential facilities within the limits of the Highway 49 and 36 scenario.

Results for Propane Release Analysis in Chrisman

SIU calculated an estimate of property exposed to the propane spill in Chrisman by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and AEGL 1: ≥ 0.5 ppm). Figure 4-27 depicts the propane spill footprint and location of the buildings exposed to the propane spill in Chrisman. This GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the propane plume are insignificant.

Figure 4-27: ALOHA Plume Footprint Overlaid in ArcGIS for the Chrisman Propane Release



Critical Facilities Damage

There are no critical facilities within the limits of the Chrisman propane scenario.

Results for Chlorine Release Analysis in Paris

SIU calculated an estimate of property exposed to the chlorine spill in Paris by using the building inventory and intersecting these data with each of the AEGL levels (AEGL 3: ≥ 20.0 ppm, AEGL 2: ≥ 2.0 ppm and AEGL 1: ≥ 0.5 ppm). Figure 4-28 depicts the chlorine spill footprint and location of buildings exposed to the spill in Paris. This GIS overlay analysis estimates that the full replacement cost of the buildings exposed to the chlorine plume are over $20,968,000. Table 4-24 lists building exposure by AEGL zone.

Figure 4-28: ALOHA Plume Footprint Overlaid in ArcGIS for the Paris Chlorine Release

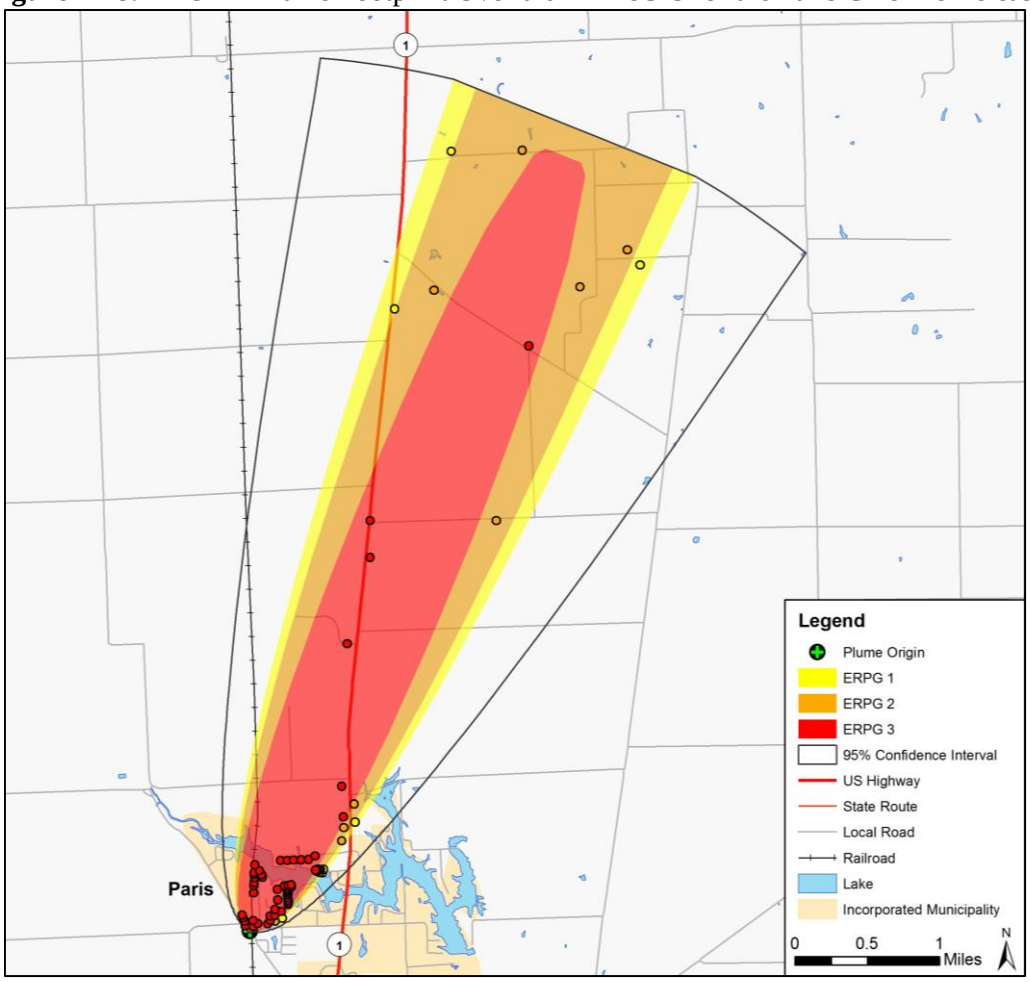


Table 4-24: Estimated Building Exposure for all AEGL Zones (x 1000) as a result of the Paris Chlorine Release

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Residential	$1,822	$2,910	$13,061	67	50	11
Commercial	$61	$3,006	$109	5	1	13
Industrial	$0	$0	$0	0	0	0
Agriculture	$0	$0	$0	0	0	0
Religious	$0	$0	$0	0	0	0
Government	$0	$0	$0	0	0	0

Occupancy	Building Exposure			Number of Buildings		
	AEGL 1	AEGL 2	AEGL 3	AEGL 1	AEGL 2	AEGL3
Education	$0	$0	$0	0	0	0
Total:	**$1,883**	**$5,915**	**$13,170**	**89**	**201**	**1271**

Essential Facilities Damage
There are no essential facilities within the limits of the Paris chlorine scenario.

Building Inventory Damage
Table 4-10 lists the building exposure, including type and number of buildings, for the entire county. Buildings within the county can all expect impacts similar to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris and loss of function of the building (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Vulnerability to Future Assets/Infrastructure for Hazardous Materials Storage and Transportation Hazard
Any new development within the county will be vulnerable to these events, especially development along major roadways.

Suggestion for Community Development Trends
Because the hazardous material hazard events may occur anywhere within the county, future development is impacted. The major transportation routes and the industries located in Edgar County pose a threat of dangerous chemicals and hazardous materials release.

4.4.4 Drought and Extreme Heat

Hazard Definition for Drought Hazard
Drought is a climatic phenomenon. The meteorological condition that creates a drought is below-normal rainfall. However, excessive heat can lead to increased evaporation, which enhances drought conditions. Droughts can occur in any month. Drought differs from normal arid conditions found in low-rainfall areas. Drought is the consequence of a reduction in the amount of precipitation over an undetermined length of time (usually a growing season or longer).

The severity of a drought depends on location, duration, and geographical extent. Additionally, drought severity depends on the water supply, usage demands by human activities, vegetation, and agricultural operations. Drought will affect the quality and quantity of crops, livestock, and other agricultural assets. Drought can adversely impact forested areas leading to an increased potential for extremely destructive forest and woodland fires that could threaten residential, commercial, and recreational structures.

Hazard Definition for Extreme Heat Hazard
Drought conditions are often accompanied by extreme heat, which is defined as temperatures that exceed the average high for the area by 10°F or more for the last for several weeks.

Common Terms Associated with Extreme Heat
Heat Wave: Prolonged period of excessive heat often combined with excessive humidity.

Heat Index: A number, in degrees Fahrenheit, which estimates how hot it feels when relative humidity is added to air temperature. Exposure to full sunshine can increase the heat index by 15°F.

Heat Cramps: Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with heat.

Heat Exhaustion: Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs, resulting in a form of mild shock. If left untreated, the victim's condition will worsen. Body temperature will continue to rise, and the victim may suffer heat stroke.

Heat and Sun Stroke: A life-threatening condition. The victim's temperature control system, which produces sweat to cool the body, stops working. The body's temperature can rise so high that brain damage and death may result if the body is not cooled quickly.
Source: FEMA

Previous Occurrences for Drought and Extreme Heat

The NCDC database reported seven drought/heat wave events in Edgar County since 1997. The most recent reported event occurred in 2006. An extended period of heat and humidity occurred across central and southeast Illinois from July 30th to August 2nd. Afternoon high temperatures ranged from 94 to 100 degrees most afternoons, with afternoon heat indices ranging from 105 to 110. Extreme heat attributed to multiple deaths but no property losses, no crop losses, or no injuries in Edgar County.

Table 4-25 includes NCDC-recorded droughts/heat waves that caused damage, death, or injury in Edgar County. Additional details of individual hazard events are on the NCDC website.

Table 4-25: NCDC-Recorded Drought and/or Extreme Heat That Caused Damage, Death, or Injury in Edgar County

Location or County	Date	Deaths	Injuries	Property Damage (x $1000)	Crop Damage (x $1000)
Edgar	7/20/1999	4	0	0	0
Edgar	7/26/1997	2	0	0	0
Edgar	6/26/1998	1	0	0	0
Edgar	7/28/1999	1	0	0	0
Edgar	7/22/2005	1	0	0	0
Edgar	7/30/2006	1	0	0	0
Total:		**10**	**0**	**0**	**0**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Drought and Extreme Heat

Droughts are regional in nature. Most areas of the United States are vulnerable to the risk of drought and extreme heat.

Hazard Extent for Drought and Extreme Heat

The extent of droughts or extreme heat varies both depending on the magnitude and duration of the heat and the range of precipitation.

Risk Identification for Drought and/or Extreme Heat

Based on input from the Edgar County planning team, drought occurrence is likely. Drought and/or extreme heat ranked as the number four hazard, according to the RPI.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
3	x	2	=	6

Vulnerability Analysis for Drought and Extreme Heat

Drought and extreme heat are a potential threat across the entire county; therefore, the county is vulnerable to this hazard and can expect impacts within the affected area. According to FEMA, approximately 175 Americans die each year from extreme heat. Young children, elderly, and hospitalized populations have the greatest risk.

The entire population and all buildings are at risk. Table 4-10 includes the building exposure for Edgar County, as determined from the building inventory.

Critical Facilities

All critical facilities are vulnerable to drought. A critical facility will encounter many of the same impacts as any other building within the jurisdiction, which should involve little or no damage. Potential impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather. Table 4-9 lists the types and numbers of all of the essential facilities in the area. Appendices E and F include a list and map of all critical facilities in Edgar County.

Building Inventory

Table 4-10 lists the building exposure, including types and numbers of buildings for the entire county. The buildings within the county can all expect impacts similar to those discussed for critical facilities. These impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather.

Infrastructure

During a drought, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with fire, which could result from hot, dry conditions. Since the county's entire infrastructure is vulnerable, damage to any infrastructure is possible. The impacts to these items include: impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or impassable railways. Bridges could become impassable, causing risk to motorists.

Vulnerability to Future Assets/Infrastructure from Drought/Extreme Heat Hazard

Future development will remain vulnerable to droughts. Typically, some urban and rural areas are more susceptible than others. For example, urban areas are subject to water shortages during periods of drought. Excessive demands of densely populated areas put a limit on water resources. In rural areas, crops and livestock may suffer from extended periods of heat and drought. Dry conditions can lead to the ignition of wildfires that could threaten residential, commercial, and recreational areas.

Assessment of Community Development Trends

Because droughts and extreme heat are regional in nature, future development is susceptible to drought. Although urban and rural areas are equally vulnerable to this hazard, those living in urban areas may have a greater risk from the effects of a prolonged heat wave. The atmospheric conditions that create extreme heat tend to trap pollutants in urban areas, adding contaminated air to the excessively hot temperatures and creating increased health problems. Furthermore, asphalt and concrete store heat longer, gradually releasing it at night and producing high nighttime temperatures. This phenomenon is known as the "urban heat island effect."

Source: FEMA

Local officials should address drought and extreme heat hazards by educating the public on steps to take before and during the event—for example, temporary window reflectors to direct heat back outside, staying indoors as much as possible, and avoiding strenuous work during the warmest part of the day.

4.4.5 Winter Storm Hazard

Hazard Definition of Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, or death and cause property damage and disrupt economic activity.

Ice (Glazing) and Sleet Storms

Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves raindrops that freeze completely before reaching the ground. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

Ice storms are some of the most damaging winter storms in Illinois. Ice storms occur when moisture-laden Gulf air converges with the northern jet stream causing freezing rain that coats power and communication lines and trees with heavy ice. Strong winds can cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication.

Snow Storms

Rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility, characterize significant snowstorms. A blizzard is categorized as a snow storm with winds of 35 miles per hour or greater and/or visibility of less than one-quarter mile for three or more hours. Strong winds during a blizzard blow falling and fallen snow, creating poor visibility and impassable roadways. Blizzards potentially result in property damage.

Blizzards repeatedly affect Illinois. Blizzard conditions cause power outages, loss of communication, and transportation difficulties. Blizzards can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe Cold

Severe cold involves ambient air temperatures that drop to 0˚F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature's effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person's body will decrease.

Previous Occurrences of Winter Storm Hazard

The NCDC database identified 26 winter storm and extreme cold events for Edgar County since 1994. The most recent reported event occurred in February of 2011 when a winter storm produced 3 to 4 inches of sleet, 4 to 6 inches of snow, and one quarter of an inch of ice. Table 4-26 lists the NCDC-recorded winter storms that caused damage, death, or injury in Edgar County. Additional details of individual hazard events are on the NCDC website.

Table 4-26: NCDC-Recorded Winter Storms That Caused Damage, Death, or Injury in Edgar County

Location or County	Date	Deaths	Injuries	Property Damage (x $1000)
Edgar	1/18/1996	0	2	0
Edgar	1/19/2000	0	2	0
Edgar	1/2/1996	0	4	0
Edgar	1/8/1997	0	6	0
Edgar	1/26/1997	0	9	0
Edgar	12/8/1995	1	0	0
Edgar	12/18/1995	1	0	0
Edgar	3/19/1996	1	0	0
Edgar	1/1/1999	1	1	0
Edgar	12/13/2000	1	1	0
Edgar	12/15/1997	1	7	0
Edgar	3/11/2000	1	9	0
Edgar	2/2/1996	2	0	0
Edgar	3/8/1998	2	0	0
	Total:	**11**	**41**	**0**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location of Winter Storm Hazard

Severe winter storms are regional in nature. Most of the NCDC data are calculated regionally or in some cases statewide.

Hazard Extent of Winter Storm Hazard

The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the county.

Risk Identification of Winter Storm Hazard

Based on historical information and input from the planning team, the occurrence of future winter storms is likely. The county should expect winter storms of varying magnitudes. According to the RPI, winter storms ranked as the number four hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
3	x	2	=	6

Vulnerability Analysis of Winter Storm Hazard

Winter storm impacts are equally likely across the entire county; therefore, the entire county is vulnerable to a winter storm and can expect impacts within the affected area. Table 4-10 includes the building exposure for Edgar County, as determined from the building inventory.

Critical Facilities

All critical facilities are vulnerable to a winter storm. A critical facility will encounter many of the same impacts as other buildings within the county. These impacts include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Table 4-9 lists the types and numbers of the essential facilities in the area. Appendices E and F include a list and map of all critical facilities.

Building Inventory
Table 4-10 lists the building exposure in terms of types and numbers of buildings for the entire county. The impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure
During a winter storm, the types of potentially impacted infrastructure include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that a winter storm could impact any structure. Potential impacts include broken gas and/or electricity lines or damaged utility lines, damaged or impassable roads and railways, and broken water pipes.

Potential Dollar Losses for Winter Storm Hazard
SIU determined that since 1994 Edgar County has incurred significant property damages for some winter storms, including sleet/ice and heavy snow. The National Weather Service reports that on average, Edgar County receives 25.4 inches of ice/snow per year.

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard
Any new development within the county will remain vulnerable to these events.

Suggestions for Community Development Trends
Because winter storm events are regional in nature, future development across the county will also face winter storms.

4.4.6 Fire Hazard

Hazard Definition for Fire Hazard
This plan addresses three major categories of fires for Edgar County: (1) tire/scrap fires; (2) structural fires; and (3) wildfires.

Tire Fires
The state of Illinois generates thousands of scrap tires annually. Many of those scrap tires end up in approved storage sites that are carefully regulated and controlled by federal and state officials. However, scrap tires are sometimes dumped in unapproved locations throughout the state, the number of which is inestimable.

Tire disposal sites are potential fire hazards, in large part, because of the large number of scrap tires typically present at one site. This large amount of fuel renders standard firefighting practices nearly useless. Flowing and burning oil released by the scrap tires can spread the fire to adjacent areas. Tire fires differ from conventional fires in the following ways:

- Relatively small tire fires can require significant fire resources to control and extinguish.
- Those resources often strain local community and county capabilities.
- Major tire fires can have significant environmental consequences. Extreme heat can convert a standard vehicle tire into approximately two gallons of oily residue that may leak into the soil or migrate to streams and waterways.

Structural Fires
Lightning strikes, poor building construction, and poor building condition are the main causes for most structural fires in Illinois. Edgar County has a few structural fires each year countywide.

Wildfires
When hot and dry conditions develop, forests may become vulnerable to wildfires. In the past few decades, increased commercial and residential development near forested areas has dramatically changed the nature

and scope of the wildfire hazard. In addition, the increase in structures resulting from new development can strain the effectiveness of fire service personnel in the county.

Previous Occurrences for Fire Hazard
Edgar County has not experienced a significant or large-scale fire that resulted in a large number of fatalities or serious injuries.

Geographic Location for Fire Hazard
Fire hazards occur countywide and therefore affect the entire county. The forested areas in the county have a higher chance of widespread fire hazard.

Hazard Extent for Fire Hazard
The extent of the fire hazard varies both in terms of the severity of the fire and the type of material burning. Fires are a potential hazard for all communities in Edgar County.

Risk Identification for Fire Hazard
Based on input from the Edgar County planning team, fire occurrence is likely. Fire/explosion ranked as the number five hazard, according to the RPI.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
3	x	2	=	6

Vulnerability Analysis for Fire Hazard
Fire hazard threatens the entire jurisdiction; therefore, the entire population and all buildings within the county are vulnerable to fires.

Table 4-10 includes the building exposure for Edgar County, as determined from the building inventory. The entire population and all buildings are at risk.

Critical Facilities
All critical facilities are vulnerable to fire hazards. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural damage from fire and water damage from efforts extinguishing fire. Table 4-9 lists the types and numbers of essential facilities in the area. Appendices E and F include a list and map of all critical facilities in Edgar County.

Building Inventory
Table 4-10 lists building exposure, including types and numbers of buildings for the entire county. Impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These impacts include structural damage from fire and water damage from efforts to extinguish the fire.

Infrastructure
During a fire, potentially impacted infrastructure includes roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that a fire could damage any number of these items. Potential impacts include structural damage resulting in impassable roadways and power outages.

Vulnerability to Future Assets/Infrastructure for Fire Hazard
Any future development will be vulnerable to these events.

Assessment of Community Development Trends
Fire hazard events may occur anywhere within the county, therefore future development is at risk.

4.4.7 Earthquake Hazard

Hazard Definition

An earthquake is a shaking of the earth caused by the energy released when large blocks of rock slip past each other in the earth's crust. Imagine pressing two sandpaper blocks firmly together and trying to slide them past one another; at first they don't move at all, but as you continue to work harder they slip past each other very quickly. Similarly, blocks of the earth's crust (tectonic plates) are very slowly trying to slide past each other. When they build up enough energy, they quickly slip past each other, generating an earthquake.

Most earthquakes occur at tectonic plate boundaries; however, some earthquakes occur in the middle of plates, for example the New Madrid Seismic Zone or the Wabash Valley Fault System. Both of these seismic areas have a geologic history of strong quakes, and an earthquake from either seismic area could possibly affect Illinois counties. There may be other, currently unidentified faults in the Midwest also capable of producing strong earthquakes.

Strong earthquakes can collapse buildings and infrastructure, disrupt utilities, and trigger landslides, avalanches, flash floods, fires, and tsunamis. When an earthquake occurs in a populated area, it may cause death, injury, and extensive property damage. An earthquake might damage essential facilities, such as fire departments, police departments, and hospitals, disrupting emergency response services in the affected area. Strong earthquakes may also require mass relocation; however, relocation may be impossible in the short-term aftermath of a significant event due to damaged transportation infrastructure and public communication systems.

Earthquakes are usually measured by two criteria: intensity and magnitude (M). Earthquake intensity qualitatively measures the strength of shaking produced by an earthquake at a certain location and is determined from effects on people, structures, and the natural environment. Earthquake magnitude quantitatively measures the energy released at the earthquake's subsurface source in the crust, or epicenter. SIU uses magnitude in the earthquake hazard analysis. Table 4-27 provides a comparison of magnitude and intensity, and Table 4-28 provides qualitative descriptions of intensity, for a sense of what a given magnitude might feel like.
Source: http://earthquake.usgs.gov/learning/topics/mag_vs_int.php

Table 4-27: Comparison of Earthquake Magnitude and Intensity

Magnitude (M)	Typical Maximum Modified Mercalli Intensity
1.0 – 3.0	I
3.0 – 3.9	II – III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.9	VII – IX
7.0 and higher	VIII or higher

Table 4-28: Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motorcars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.

Mercalli Intensity	Description
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motorcars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, and walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Previous Occurrences for Earthquakes

Historically, the most significant seismic activity in Illinois is associated with New Madrid Seismic Zone. The New Madrid Seismic Zone produced three large earthquakes in the central U.S. with magnitudes estimated between 7.0 and 7.7 on December 16, 1811, January 23, 1812, and February 7, 1812. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment (sand blows) over an area >10,500 km^2, and uplifted a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km^2 (the largest felt area of any historic earthquake). The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811-1812 type earthquakes (M7.5-8.0) is 7%-10% over the next 50 years (USGS Fact Sheet 2006-3125).

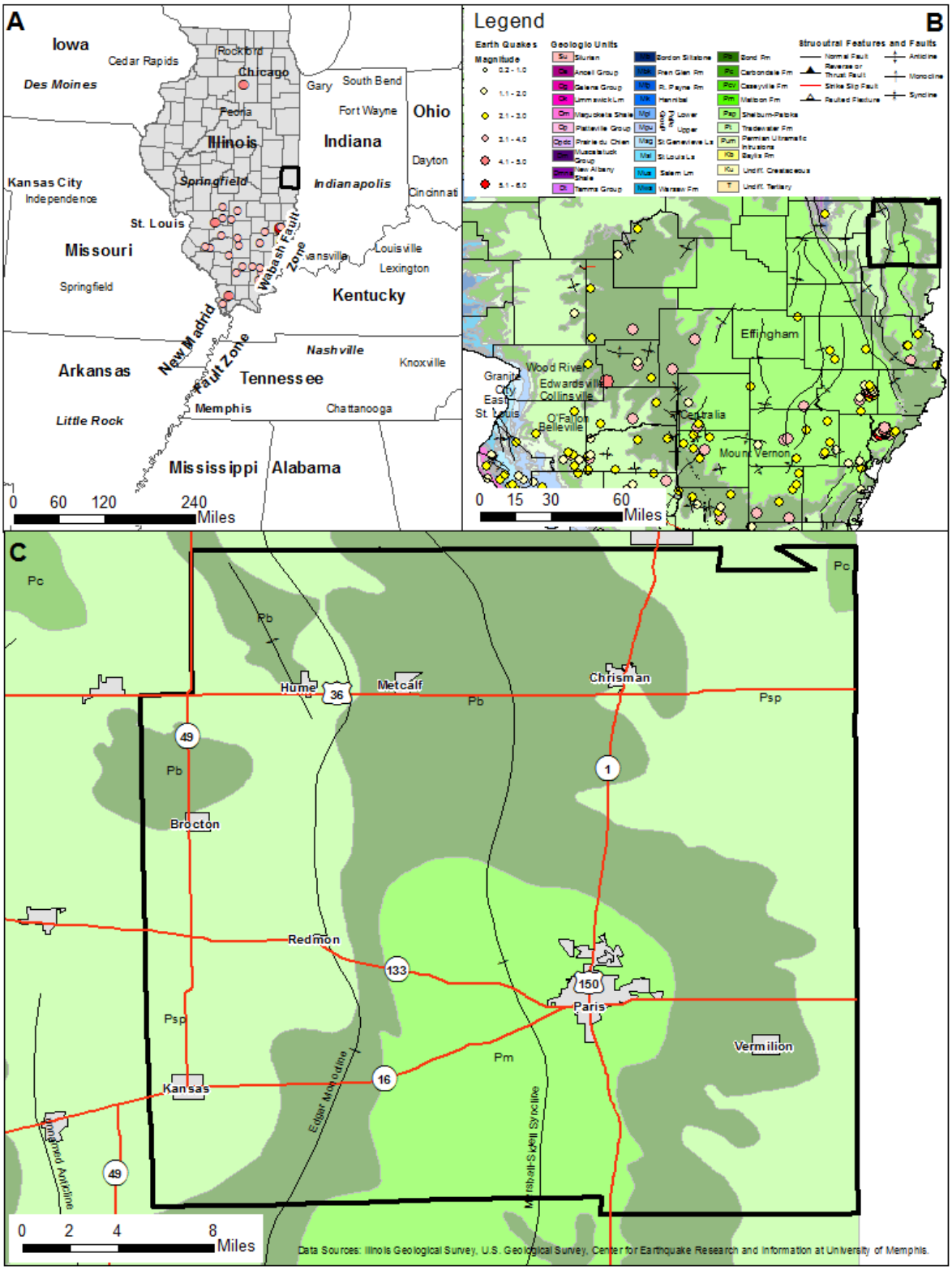
Earthquakes measured in Illinois typically vary in magnitude from very low microseismic events of M=1-3 to larger events up to M=5.4. The most recent earthquake in Illinois—as of the date of this report—was a M2.1 event in February, 2013 approximately four miles SW of Tamms, IL. The last earthquake in Illinois to cause minor damage occurred on April 18, 2008 near Mt. Carmel, IL and measured 5.2 in magnitude. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years and are historically concentrated in southern Illinois.

Geographic Location for Earthquake Hazard

The two most significant zones of seismic activity in Illinois are the New Madrid Seismic Zone and the Wabash Valley Fault System. There are no earthquake epicenters recorded in Edgar County. While large earthquakes (>M7.0) experienced during the New Madrid Events of 1811 and 1812 are unlikely in Edgar County, moderate earthquakes (≤ 6.0M) in or in the vicinity of Edgar County are probable. The USGS estimates the probability of a moderate M5.5 earthquake occurring in Edgar County within the next 500-years at approximately 12% (USGS 2009).

Figure 4-29 depicts the following: (A) location of notable earthquakes in Illinois region; (B) generalized geologic bedrock map with earthquake epicenters and geologic structures; (C) geologic and earthquake epicenter map of Edgar County.

Figure 4-29: Recorded Earthquakes in the U.S. Midwest and Geology of Edgar County



Hazard Extent for Earthquake Hazard

Earthquake effects are possible anywhere in Edgar County. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. SIU used a National Earthquake Hazards Reduction Program (NEHRP) compliant soils map provided by FEMA for the analysis. The map identifies the soils most susceptible to failure.

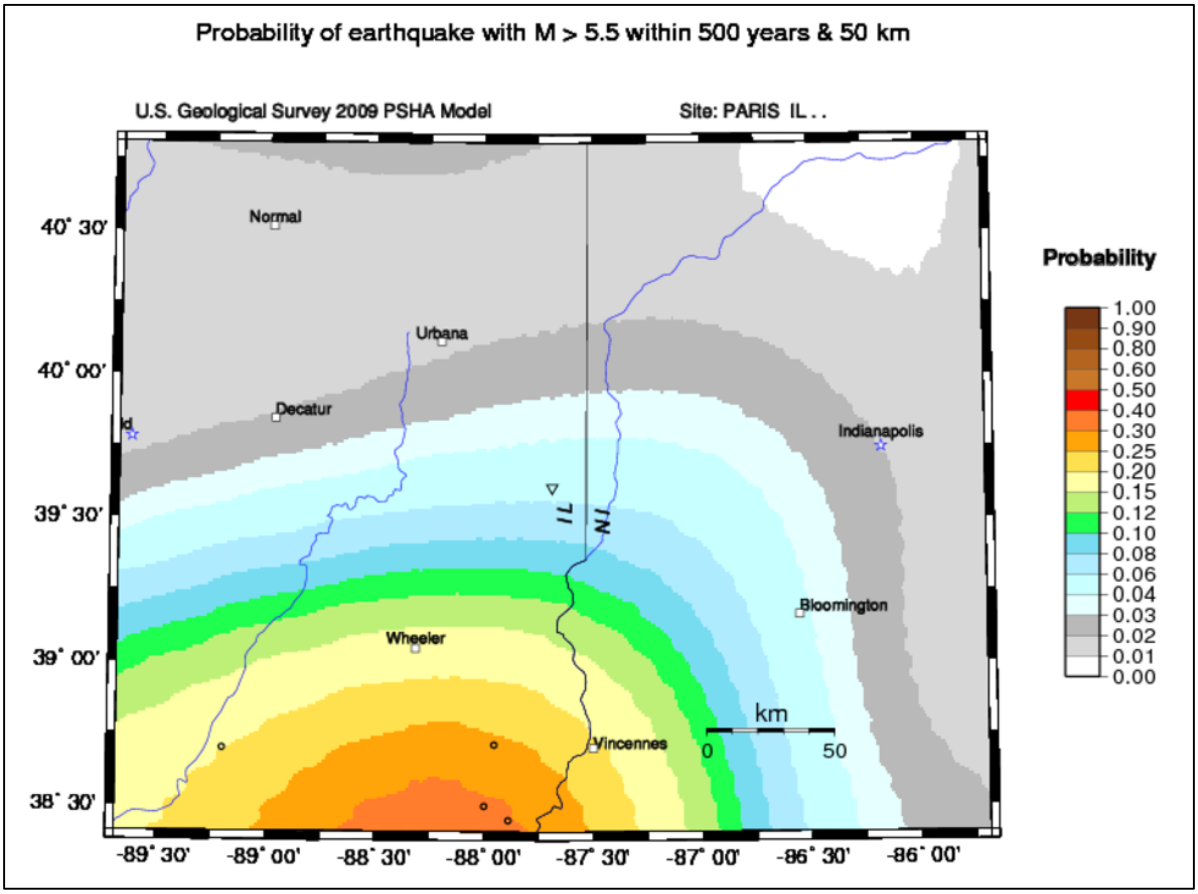
Risk Identification for Earthquake Hazard

Based on historical information and current USGS and SIU research and studies, future earthquakes in Edgar County are possible, but large (>M7.0) earthquakes that cause catastrophic damage are unlikely. Figure 4-30 illustrates the probability of a M5.5 event occurring within the next 500 years in the Edgar County region. According to the Edgar County planning team's assessment, earthquakes are ranked as the number six hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
2	x	2	=	4

Figure 4-30: USGS Probability Map for a M5.5 Earthquake Occurring in the Next 500 Years within Edgar County



Vulnerability Analysis for Earthquake Hazard

Earthquakes could impact the entire county equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake. To accommodate this risk, this plan considers all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities are vulnerable to earthquakes. A critical facility would encounter many of the same impacts as any other building within the county. These impacts include structural failure and loss of facility functionality (e.g., a damaged police station cannot serve the community). Appendices E and F include a list and map of all critical facilities in Edgar County.

Building Inventory

Table 4-10 displays the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect similar impacts to those discussed for critical facilities. These impacts include structural failure and loss of building function which could result in indirect impacts (e.g., damaged homes will no longer be habitable causing residents to seek shelter).

Infrastructure

During an earthquake, the types of infrastructure that shaking could impact include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to SIU, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g., loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing risk to motorists.

Hazus-MH Analyses for Four Earthquake Scenarios

SIU reviewed existing geological information and recommendations from the planning team for earthquake scenarios. SIU ran a deterministic and a probabilistic earthquake scenario to provide a reasonable basis for earthquake planning in Edgar County. The deterministic scenario was a Moment Magnitude of 5.5 with the epicenter located in Edgar County near Paris, IL. This represents a realistic scenario for planning purposes.

Additionally, the earthquake-loss analysis included a probabilistic scenario based on ground-shaking parameters derived from U.S. Geological Survey probabilistic seismic hazard curves for the earthquake with the 500-year return period. This scenario evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude typical of that expected for a 500-year return period.

The earthquake hazard modeling scenarios performed are:

- Magnitude 5.5 deterministic event near Paris, IL
- Magnitude 5.0 500-year probability event in Edgar County
- Magnitude 7.1 deterministic event along the Wabash Valley Seismic Zone
- Magnitude 7.7 deterministic event along the New Madrid Seismic Zone

Modeling a deterministic scenario requires user input for a variety of parameters. One of the most critical sources of information required for accurate assessment of earthquake risk is soils data. SIU used a NEHRP soil classification map for Illinois in the analysis. NEHRP soil classifications portray the degree of shear-wave amplification that can occur during ground shaking. FEMA provided the soils map and liquefaction-potential map that is the default in Hazus-MH.

Earthquake hypocenter depths in Illinois range from less than 1.0 to ~25.0 km. The deterministic scenarios used the average hypocenter depth of ~10.0 km. For this scenario type, Hazus-MH requires the user to define an attenuation function. SIU used the Toro et al. (1997) attenuation function for the deterministic

earthquake scenario to maintain consistency with the USGS (2006) strong ground motion modeling in the central United States.

This report presents two types of building losses: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

Results for M5.5 Deterministic Scenario – General Building Stock

Figure 4-31 and Tables 4-29 and 4-30 show the results of the deterministic M5.5 earthquake scenario with an epicenter near Paris, IL. Hazus-MH estimates that approximately 185 buildings will be at least moderately damaged. This is more than 2% of the total number of buildings in the region. Hazus-MH estimates that the event would damage one building beyond repair. Total building-related losses totaled $16.08 million; 10% of the estimated losses were related to the business interruption. The residential occupancy class sustained the largest loss, experiencing 55% of the total loss.

Figure 4-31: 5.5 Magnitude Earthquake Scenario for Edgar County

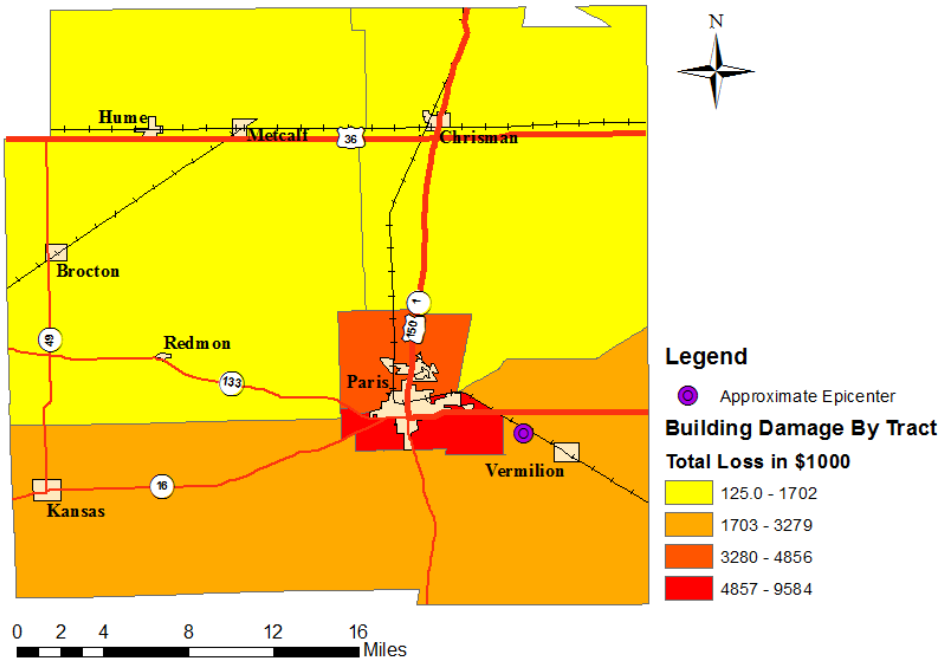


Table 4-29: 5.5 Magnitude Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	239	2.33	9	1.48	3	2.13	1	2.55	0	1.57
Commercial	386	3.77	24	4.14	10	5.91	2	7.71	0	6.27
Educational	21	0.20	1	0.23	1	0.35	0	0.46	0	0.57
Government	21	0.20	1	0.14	0	0.18	0	0.22	0	0.25
Industrial	111	1.08	7	1.13	3	1.68	0	2.14	0	1.45
Other Residential	2,624	25.58	144	24.70	45	27.66	5	23.18	0	19.64

Religion	49	0.47	4	0.63	1	0.90	0	1.20	0	1.22
Single Family	6,809	66.35	394	67.55	100	61.18	13	62.54	1	69.04
Total:	**10,260**		**584**		**163**		**21**		**1**	

Table 4-30: Building Economic Losses (in Millions of Dollars) for a 5.5 Magnitude Earthquake

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	0.00	0.02	0.20	0.02	0.03	0.27
	Capital-Related	0.00	0.01	0.16	0.01	0.01	0.19
	Rental	0.13	0.07	0.13	0.01	0.01	0.35
	Relocation	0.47	0.06	0.18	0.06	0.10	0.87
	Subtotal:	**0.60**	**0.16**	**0.67**	**0.10**	**0.15**	**1.68**
Capital Stock Losses	Structural	0.68	0.12	0.23	0.10	0.14	1.27
	Non-Structural	3.83	1.07	1.47	1.04	0.64	8.05
	Content	1.95	0.40	1.17	0.84	0.51	4.87
	Inventory	0.00	0.00	0.05	0.14	0.02	0.21
	Subtotal:	**6.46**	**1.59**	**2.92**	**2.12**	**1.31**	**14.40**
	Total:	**7.06**	**1.75**	**3.59**	**2.22**	**1.46**	**16.08**

Results for 500-Year Probabilistic Scenario – General Building Stock

Tables 4-31 and 4-32 show the results of the 500-year probabilistic analysis. Hazus-MH estimates that the event would at least moderately damage approximately 159 buildings. This is more than 1.00 % of the total number of buildings in the region. Hazus-MH estimates that the event would damage one building beyond repair. Building-related losses totaled $5.67 million; 23% of the estimated losses were related to the business interruption of the region. The residential occupancy class sustained the largest loss, experiencing 58% of the total loss.

Table 4-31: 500-Year Probabilistic Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	232	2.24	14	2.64	6	4.09	1	5.12	0	3.12
Commercial	389	3.76	23	4.42	9	6.08	1	7.41	0	5.44
Educational	21	0.20	1	0.24	0	0.34	0	0.39	0	0.49
Government	21	0.20	1	0.21	0	0.27	0	0.28	0	0.35
Industrial	111	1.08	7	1.28	3	1.87	0	2.28	0	1.42
Other Residential	2,628	25.39	142	27.49	44	30.90	4	24.93	0	22.03
Religion	50	0.48	3	0.58	1	0.80	0	1.01	0	0.95
Single Family	6,898	66.65	327	63.14	79	55.64	10	58.58	1	66.21
Total:	**10,350**		**518**		**142**		**16**		**1**	

Table 4-32: Building Economic Losses (in Millions of Dollars) for a 500-Year Probabilistic Earthquake

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	0.00	0.01	0.15	0.02	0.02	0.20
	Capital-Related	0.00	0.00	0.12	0.01	0.01	0.14

	Rental	0.10	0.05	0.10	0.01	0.01	0.27
	Relocation	0.36	0.05	0.14	0.05	0.08	0.68
	Subtotal:	**0.46**	**0.11**	**0.51**	**0.09**	**0.12**	**1.29**
Capital Stock Losses	Structural	0.55	0.10	0.18	0.09	0.15	1.07
	Non-Structural	1.43	0.30	0.37	0.21	0.20	2.51
	Content	0.30	0.05	0.17	0.14	0.10	0.76
	Inventory	0.00	0.00	0.01	0.02	0.01	0.04
	Subtotal:	**2.28**	**0.45**	**0.73**	**0.46**	**0.46**	**4.38**
	Total:	**2.74**	**0.56**	**1.24**	**0.55**	**0.58**	**5.67**

Results for M7.1 Wabash Valley Scenario – General Building Stock

Figure 4-32 and Tables 4-33 and 4-34 show the results of the deterministic M7.1 Wabash Valley Seismic Zone scenario. Hazus-MH estimates that approximately 200 buildings will be at least moderately damaged. This is more than 2.00% of the total number of buildings in the region. Hazus-MH estimates that the event would damage one building beyond repair. Total building-related losses totaled $23.58 million; 7% of the estimated losses were related to the business interruption. The residential occupancy class sustained the largest loss, experiencing 57% of the total loss.

Figure 4-32: 7.1 Magnitude Wabash Valley Earthquake Scenario for Edgar County

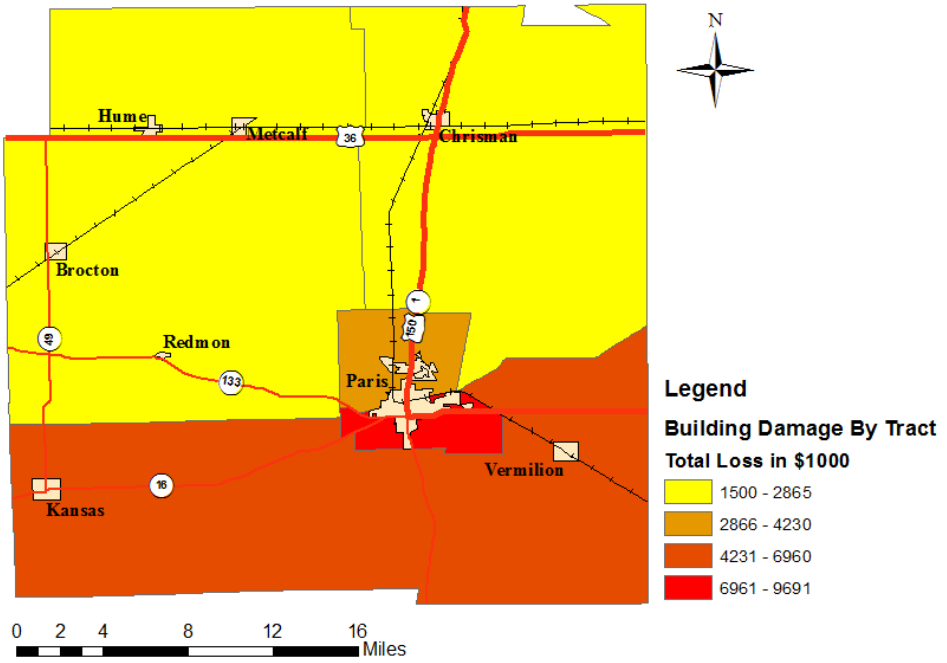


Table 4-33: 7.1 Magnitude Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	203	2.15	38	2.73	10	5.37	0	7.07	0	2.88
Commercial	346	3.68	60	4.28	15	7.50	0	9.75	0	4.82
Educational	19	0.20	3	0.24	1	0.36	0	0.42	0	0.47
Government	19	0.20	3	0.19	1	0.27	0	0.30	0	0.29
Industrial	99	1.05	17	1.24	5	2.33	0	3.05	0	1.21

Other Residential	2,348	24.94	404	28.69	64	32.94	1	23.76	0	21.88
Religion	44	0.47	8	0.59	2	0.92	0	1.17	0	0.93
Single Family	6,338	67.32	875	62.04	98	50.31	3	54.49	0	67.53
Total:	**9,416**		**1,408**		**196**		**4**		**0**	

Table 4-34: Building Economic Losses (in Millions of Dollars) for a 7.1 Magnitude Earthquake

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	0.00	0.01	0.21	0.02	0.04	0.28
	Capital-Related	0.00	0.00	0.16	0.01	0.01	0.18
	Rental	0.11	0.06	0.16	0.01	0.01	0.35
	Relocation	0.36	0.06	0.19	0.07	0.10	0.78
	Subtotal:	**0.47**	**0.13**	**0.72**	**0.11**	**0.16**	**1.59**
Capital Stock Losses	Structural	0.80	0.16	0.25	0.13	0.22	1.56
	Non-Structural	6.10	1.48	1.99	1.52	1.09	12.18
	Content	3.61	0.59	1.58	1.22	0.92	7.92
	Inventory	0.00	0.00	0.06	0.22	0.05	0.33
	Subtotal:	**10.51**	**2.23**	**3.88**	**3.09**	**2.28**	**21.99**
	Total:	**10.98**	**2.36**	**4.60**	**3.20**	**2.44**	**23.58**

Results for M7.7 New Madrid Scenario – General Building Stock

Figure 4-33 and Tables 4-35 and 4-36 show the results of the deterministic M7.7 New Madrid Seismic Zone scenario. Hazus-MH estimates that approximately 4 buildings will be at least moderately damaged. Hazus-MH estimates that the event would damage no building beyond repair. Total building-related losses totaled $1.15 million; 4% of the estimated losses were related to the business interruption. The residential occupancy class sustained the largest loss, experiencing 47% of the total loss.

Figure 4-33: 7.7 Magnitude New Madrid Earthquake Scenario for Edgar County

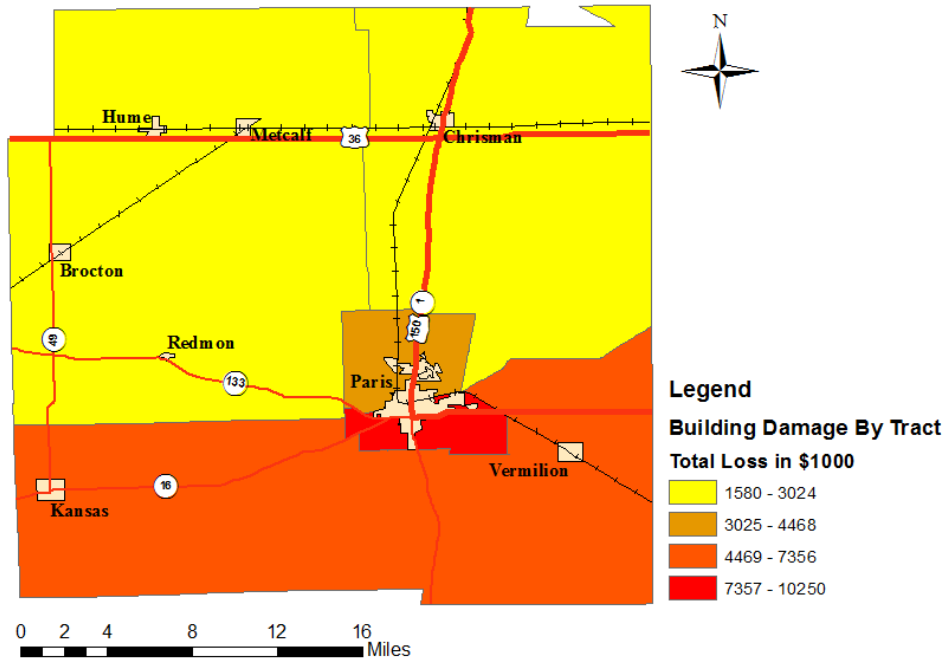


Table 4-35: 7.7 Magnitude Earthquake Damage Estimates by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	249	2.27	3	3.42	0	5.48	0	5.32	0	0.00
Commercial	417	3.81	5	5.26	0	7.95	0	7.76	0	0.00
Educational	23	0.21	0	0.31	0	0.37	0	0.48	0	0.00
Government	22	0.20	0	0.26	0	0.34	0	0.41	0	0.00
Industrial	120	1.09	1	1.55	0	2.50	0	2.29	0	0.00
Other Residential	2,784	25.47	31	36.29	2	39.72	0	20.34	0	0.00
Religion	53	0.49	1	0.70	0	0.88	0	1.06	0	0.00
Single Family	7,266	66.46	45	52.20	2	42.75	0	62.33	0	0.00
Total:	**10,934**		**86**		**4**		**0**		**0**	

Table 4-36: Building Economic Losses (in Millions of Dollars) for a 7.7 Magnitude Earthquake

Category	Area	Single Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses	Wage	0.00	0.00	0.01	0.00	0.00	0.01
	Capital-Related	0.00	0.00	0.01	0.00	0.00	0.01
	Rental	0.00	0.00	0.01	0.00	0.00	0.01
	Relocation	0.01	0.00	0.01	0.00	0.00	0.02
	Subtotal:	**0.01**	**0.00**	**0.04**	**0.00**	**0.00**	**0.05**
Capital Stock Losses	Structural	0.03	0.01	0.01	0.01	0.01	0.07
	Non-Structural	0.24	0.08	0.13	0.10	0.07	0.62
	Content	0.14	0.03	0.09	0.08	0.06	0.40
	Inventory	0.00	0.00	0.00	0.01	0.00	0.01
	Subtotal:	**0.41**	**0.12**	**0.23**	**0.20**	**0.14**	**1.10**
	Total:	**0.42**	**0.12**	**0.27**	**0.20**	**0.14**	**1.15**

Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

New construction, especially critical facilities, should accommodate earthquake mitigation design standards.

Suggestions for Community Development Trends

Community development should occur outside of the low-lying areas in floodplains with a water table within five feet of grade that is susceptible to liquefaction.

At Meeting 4, the MHMP team discussed specific mitigation strategies for reducing earthquake hazard. The discussion included strategies to harden and protect future and existing structures against the possible termination of public services and systems including power lines, water and sanitary lines, and public communication (see Section 5).

4.4.8 Thunderstorm Hazard

Hazard Definition – Thunderstorm

Severe thunderstorms are weather events with one or more of the following characteristics: strong winds, large and damaging hail, and frequent lightning. Severe thunderstorms most frequently occur in Illinois during the spring and summer months, but can occur at any time. A severe thunderstorm's impacts can be

localized or can be widespread in nature. A thunderstorm is classified as severe when it meets one or more of the following criteria:

- Hail 0.75 inches or greater in diameter
- Frequent and dangerous lightning
- Wind speeds greater than or equal to 58 miles per hour

Hail

Hail is a possible product of a strong thunderstorm. Hail usually falls near the center of a storm, but strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, and some reports note hailstones larger than softballs.

Lightning

Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but lightning damages many structures and kills or severely injures numerous people in the United States each year.

Severe Winds (Straight-Line Winds)

Straight-line winds from thunderstorms are fairly common in Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences for Thunderstorm Hazard

The NCDC database reported 44 hailstorms in Edgar County since 1974. Hailstorms occur nearly every year in the late spring and early summer months. The most recent reported occurrence was on March of 2012, when a deep upper-level low helped trigger scattered strong to severe thunderstorms across east-central and southeast Illinois that produced golfball-sized hail across the county.

Table 4-37 identifies NCDC-recorded hailstorms that caused damage, death, or injury in Edgar County. Additional details of individual hazard events are on the NCDC website.

Table 4-37: NCDC-Recorded Hail Storms That Caused Damage, Death, or Injury in Edgar County

Location or County*	Date	Deaths	Injuries	Property Damage (x $1000)	Crop Damage (x $1000)
Chrisman	4/14/2006	0	0	300	0
Paris	4/27/2002	0	0	200	0
Paris	5/27/1995	0	0	110	0
Paris	9/19/2005	0	0	55	170
Paris	5/30/2008	0	0	50	0
Kansas	6/6/2008	0	0	40	0
Kansas	7/8/2008	0	0	35	0
Chrisman	4/19/2011	0	0	35	0
Brocton	7/8/2008	0	0	30	0
Paris	6/12/2010	0	0	25	0
Paris	12/6/1998	0	0	25	0
Paris	8/12/1999	0	0	20	0
Kansas	2/5/2008	0	0	20	0
Paris	10/26/2010	0	0	20	0
Paris	7/8/2008	0	0	15	0
Chrisman	6/21/2011	0	0	12	0
Paris	10/18/2007	0	0	10	0

Chrisman	6/12/2010	0	0	7	0
Hume	6/18/2009	0	0	5	0
Chrisman	6/18/2009	0	0	4	0
Chrisman	7/25/2009	0	0	3	0
Scotland	5/19/1998	0	0	1	0
Paris	5/27/1995	0	0	0	35
Chrisman	4/27/1994	0	2	0	0
Paris	4/15/1994	0	1	0	0
	Total:	**0**	**3**	**$1022**	**$205**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported no occurrences of significant lightning strikes in Edgar County.

The NCDC database includes 6 wind storms reported since 1996. The most recent event was in 2007 when a strong cold front pushed through central Illinois during the late evening and overnight hours from December 22nd into the 23rd. Several reports of damaging straight line wind gusts were received shortly after frontal passage. Most of the damage impacted tree limbs, power lines and outbuildings.

Table 4-38 identifies NCDC-recorded wind storms that caused damage, death, or injury in Edgar County. Additional details of individual hazard events are on the NCDC website

Table 4-38: NCDC-Recorded Wind Storms That Caused Damage, Death, or Injury in Edgar County

Location or County*	Date	Deaths	Injuries	Property Damage (x $1000)	Crop Damage (x $1000)
Edgar	04/30/1997	0	1	38	0
Edgar	11/10/1998	0	1	60	0
Edgar	03/25/1996	1	0	0	0
Edgar	03/05/2004	1	6	0	0
	Total:	**2**	**8**	**$98**	**$0**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database includes 97 thunderstorms reported since 1955. The most recent event was in 2001 when a cold front trailing southward that triggered strong to severe thunderstorms across east-central and southeast Illinois during the afternoon and evening. Many of the storms produced damaging wind gusts of 60 to 70 mph and hail up to the size of half dollars.

Table 4-39 shows that thunderstorms occur year-round with the greatest frequency and damage between May and July. The following table includes NCDC-recorded thunderstorms that have caused damage, death, or injury in Edgar County. Additional details of individual hazard events are on the NCDC website.

Table 4-39: NCDC-Recorded Thunderstorms That Caused Damage, Death, or Injury in Edgar County

Location or County*	Date	Deaths	Injuries	Property Damage (x $1000)	Crop Damage (x $1000)
Scotland	05/19/1998	0	0	1	0
Kansas	09/07/2012	0	0	2	0
Kansas	09/07/2012	0	0	2	0

Location or County*	Date	Deaths	Injuries	Property Damage (x $1000)	Crop Damage (x $1000)
Chrisman	07/25/2009	0	0	3	0
Metcalf	08/09/2012	0	0	3	0
Chrisman	06/18/2009	0	0	4	0
Hume	06/18/2009	0	0	5	0
Chrisman	06/12/2010	0	0	7	0
Paris	10/18/2007	0	0	10	0
Chrisman	06/21/2011	0	0	12	0
Paris	07/08/2008	0	0	15	0
Hume	08/09/2012	0	0	15	0
Paris	08/12/1999	0	0	20	0
Kansas	02/05/2008	0	0	20	0
Paris	10/26/2010	0	0	20	0
Paris	12/06/1998	0	0	25	0
Paris	06/12/2010	0	0	25	0
Brocton	07/08/2008	0	0	30	0
Kansas	07/08/2008	0	0	35	0
Chrisman	04/19/2011	0	0	35	0
Kansas	06/06/2008	0	0	40	0
Paris	05/30/2008	0	0	50	0
Paris	05/27/1995	0	0	110	0
Paris	04/27/2002	0	0	200	0
Chrisman	04/14/2006	0	0	300	0
Paris	04/15/1994	0	1	0	0
Chrisman	04/27/1994	0	2	0	0
	Total:	**0**	**3**	**$989**	**$0**

*NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location of Thunderstorm Hazard

The entire county has the same risk for occurrence of thunderstorms. They can occur at any location within the county.

Hazard Extent for Thunderstorm Hazard

The extent of the historical thunderstorms depends upon the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county.

Risk Identification for Thunderstorm Hazard

Based on historical information, the occurrence of future high winds, hail, and lightning is likely. The county should expect high winds, hail, and lightning of widely varying magnitudes in the future. According to the RPI, thunderstorms and high wind damage ranked as the number four hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude/Severity	=	RPI
3	x	2	=	6

Vulnerability Analysis for Thunderstorm Hazard

The entire county's population and all buildings are vulnerable to a severe thunderstorm and can expect the same impacts within the affected area. This plan will therefore consider all buildings located within the county as vulnerable. Table 4-9 and 4-10 show the existing buildings and infrastructure in Edgar County.

Critical Facilities

All critical facilities are vulnerable to severe thunderstorms. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a damaged police station cannot serve the community). Table 4-9 lists the types and numbers of all of the essential facilities in the area. Appendices E and F include a list and map of all critical facilities in Edgar County.

Building Inventory

Table 4-10 displays the building exposure in terms of types and numbers of buildings for the entire county. The buildings within the county can expect impacts similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g., a person cannot inhabit a damaged home, causing residents to seek shelter).

Infrastructure

A severe thunderstorm could impact roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is vulnerable, it is important to emphasize that a severe thunderstorm could damage any number of these structures. The impacts to these structures include broken, failed, or impassable roadways; broken or failed utility lines (e.g., loss of power or gas to community); or impassable railways. Bridges could become impassable causing risk to motorists.

Potential Dollar Losses for Thunderstorm Hazard

SIU determined that Edgar County has incurred $4,320,000 in damages relating to thunderstorms, including hail, lightning, and high winds since 1955. NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event. As a result, SIU cannot reliably constrain potential dollar losses for a future event; however, based on average property damage in the past decade, SIU estimates that Edgar County incurs property damages of approximately $77,000 per year related to severe thunderstorms.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

All future development within the county and all communities will remain vulnerable to these events.

Suggestions for Community Development Trends

Local officials will enhance severe storm preparedness if they sponsor a wide range of programs and initiatives to address the overall safety of county residents. The county needs to build new structures with more sturdy construction, and harden existing structures to lessen the potential impacts of severe weather. Building more warning sirens will warn the community of approaching storms to ensure the safety of Edgar County residents.

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Section 5 Mitigation Strategies

5.1 Community Capability Assessment

The goal of mitigation is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. Overall, mitigation strategies attempt to build disaster-resistant communities. Mitigation actions and projects are necessarily based on a well-constructed risk assessment (Section 4). Mitigation is an ongoing process that adapts over time to accommodate a community's needs.

5.1.1 National Flood Insurance Program (NFIP)

Paris, Chrisman, Hume, Metcalf, and the unincorporated areas of Edgar County participate in the NFIP. Communities with a flood risk who choose not to participate in the NFIP include Brocton, Hume, Kansas, Redmon, and Vermilion. Edgar County will continue to educate these jurisdictions on the benefits of the program. Table 5-1 includes a summary of additional information for Edgar County participation in the NFIP.

The county and incorporated areas do not participate in the NFIP'S Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

Table 5-1: Information on Communities in Edgar County Participating in the NFIP

Community	Participation Date	FIRM Date	CRS Date	CRS Rating	Floodplain Ordinance
Edgar County	12/14/2009	01/19/2011	N/A	N/A	12/14/2009
Paris	08/19/1985	01/19/2011	N/A	N/A	09/15/2010
Chrisman	08/23/2010	01/19/2011	N/A	N/A	08/23/2010
Metcalf	01/19/2011	01/19/2011	N/A	N/A	N/A

*NFIP status and information are documented in the Community Status Book Report updated on 06/15/2012.

Since the establishment of the NFIP in 1978, Edgar County had two flood insurance claims for the City of Paris. Table 5-2 summarizes the claims since 1978.

Table 5-2: Policy and Claim Statistics for Flood Insurance in Edgar County, IL

Community	Closed Losses	Open Losses	CWOP Losses	Total Losses	Payments
Edgar County	-	-	-	-	-
Paris	1	0	1	2	$5,134.88
Chrisman	-	-	-	-	-
Metcalf	-	-	-	-	-

*NFIP policy and claim statistics since 1978 until the most recently updated date of 12/31/2013. Closed Losses refer to losses that are paid; open losses are losses that are not paid in full; CWOP losses are losses that are closed without payment; and total losses refers to all losses submitted regardless of status. Lastly, total payments refer to the total amount paid on losses.

5.1.2 Jurisdiction Ordinances

Ordinances that directly pertain, or can pertain, to disaster mitigation are listed in Table 5-3 and are discussed in more detail, if information was provided, in this section.

Table 5-3: Edgar County's Jurisdiction Ordinances and Most Recent Adoption Date

Community Name	Zoning	Storm water Mgmt	Subdivision Control	Burning	Seismic	Erosion Mgmt	Land Use Plan	Building Codes
Edgar County	-	-	-	-	-	-	-	-
Paris	7/8/1968	-	4/24/1961	6/17/1968	-	-	7/22/2002	4/22/1994
Chrisman	-	-	-	5/15/2012	-	-	-	-
Brocton	-	-	-	-	-	-	-	-
Hume	-	-	-	-	-	-	-	-
Kansas	-	-	-	-	-	-	-	-
Metcalf	-	-	-	-	-	-	-	-
Redmon	-	-	-	-	-	-	-	-
Vermilion	-	-	-	-	-	-	-	-

5.1.3 Fire Insurance Ratings

Table 5-4 lists Edgar County's fire departments and respective information.

Table 5-4: Fire Departments, Their Insurance Ratings, and Number of Employees/Volunteers

Fire Department Name	Fire Insurance Rating	Number of Employees
City of Paris	5	16
Paris Community FPD	5/9	100
Chrisman FPD	6/9	25
Metcalf FPD	9/9	11
Hume FPD	7/9	20
Brocton FPD	8/9	18
Kansas FPD	7/9	15

5.2 Mitigation Goals

In Section 4 of this plan, the risk assessment identified Edgar County as prone to several hazards. The mitigation planning team members understand that although they cannot eliminate hazards altogether, Edgar County can work towards building disaster-resistant communities. Below is a generalized list of goals, objectives, and actions. The goals represent long-term, broad visions of the overall vision the county would like to achieve for mitigation. The objectives are strategies and steps that will assist the communities in attaining the listed goals.

Goal 1: Lessen the impacts of hazards to new and existing infrastructure

(a) Objective: Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.

(b) Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.

(c) Objective: Minimize the amount of infrastructure exposed to hazards.

(d) Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.

(e) Objective: Improve emergency sheltering in Edgar County.

Goal 2: Create new or revise existing plans/maps for Edgar County

(a) Objective: Support compliance with the NFIP for each jurisdiction in Edgar County.

(b) Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.

(c) Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.

Goal 3: Develop long-term strategies to educate Edgar County residents on the hazards affecting their county

(a) Objective: Raise public awareness on hazard mitigation.

(b) Objective: Improve education and training of emergency personnel and public officials.

5.3 Mitigation Actions/Plans

Upon completion of the risk assessment and development of the goals and objectives, the mitigation planning committee reviewed a list of the six mitigation measure categories from the FEMA State and Local Mitigation Planning How-to Guides. The measures are listed as follows:

- **Prevention:** Government, administrative, or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.
- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream-corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- **Structural Projects:** Actions that involve the construction of structures to reduce the impacts of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

After Meeting 3, held on April 17, 2013, the mitigation planning team was presented with the task of individually listing potential mitigation activities using the FEMA evaluation criteria. The planning team brought their mitigation ideas to Meeting 4, held on June 11, 2013. FEMA uses their evaluation criteria

STAPLE+E (stands for social, technical, administrative, political, legal, economic and environmental) to assess the developed mitigation strategies.

Social:

- Will the proposed action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Technical:

- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem or only a symptom?
- Does the mitigation strategy address continued compliance with the NFIP?

Administrative:

- Does the jurisdiction have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

Political:

- Is there political support to implement and maintain this action?
- Is there a local champion willing to help see the action to completion?
- Is there enough public support to ensure the success of the action?
- How can the mitigation objectives be accomplished at the lowest cost to the public?

Legal:

- Does the community have the authority to implement the proposed action?
- Are the proper laws, ordinances, and resolutions in place to implement the action?
- Are there any potential legal consequences?
- Is there any potential community liability?
- Is the action likely to be challenged by those who may be negatively affected?
- Does the mitigation strategy address continued compliance with the NFIP?

Economic:

- Are there currently sources of funds that can be used to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement this action?
- Does the action contribute to other community economic goals such as capital improvements or economic development?
- What proposed actions should be considered but be "tabled" for implementation until outside sources of funding are available?

Environmental:

- How will this action affect the environment (land, water, endangered species)?
- Will this action comply with local, state, and federal environmental laws and regulations?
- Is the action consistent with community environmental goals?

5.4 Implementation Strategy and Analysis of Mitigation Projects

Implementation of the mitigation plan is critical to the overall success of the mitigation planning process. The first step is to decide, based upon many factors, which action will be undertaken first. In order to pursue the top priority first, an analysis and prioritization of the actions is important. Some actions may occur before the top priority due to financial, engineering, environmental, permitting, and site control issues. Public awareness and input of these mitigation actions can increase knowledge to capitalize on funding opportunities and monitoring the progress of an action.

At Meeting 4, the planning team prioritized mitigation actions based on a number of factors. The factors were the STAPLE+E criteria listed in Table 5-5. For each incorporated jurisdiction, a rating of high, medium, or low was assessed for each mitigation item and is listed next to each item in Table 5-6 through 5-15.

Table 5-5: Summary of STAPLE+E Criteria

S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E – Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

For each mitigation action related to infrastructure, new and existing infrastructure was considered. Additionally, the mitigation strategies address continued compliance with the NFIP. While an official cost-benefit review was not conducted for any of the mitigation actions, the estimated costs were discussed. The overall benefits were considered when prioritizing mitigation items from high to low. An official cost-benefit review is conducted prior to the implementation of any mitigation actions. Tables 5-6 through 5-15 presents mitigation projects for each incorporated jurisdiction developed by the planning committee, as well as actions that are ongoing or already completed. Edgar County did not have applicable, detailed mitigation strategies in their first plan. The objective of this updated plan is to generate proactive mitigation strategies with clearer goals and objectives.

Table 5-6: List of Mitigation Strategies Developed at Meeting 4 for Edgar County

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Public Education/Awareness	Goal: Develop long-term strategies to educate Edgar County residents on the hazards affecting their community Objective: Raise public awareness of hazard mitigation	All Hazards	High	Edgar County plans to raise public awareness of hazard risk to the county through a Facebook page, a local television channel, and a local radio frequency. This item is ongoing.
Mutual Aid Agreements	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	High	Edgar County plans for each community to establish mutual aid agreements with surrounding communities by the end of 2015.
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Edgar County plans to obtain back-up generators for each critical facility and county government building. They will contact FEMA or Commercial Contractor by the June of 2014 to inquire about funding.
Enhanced Communication Systems/Emergency Alert Systems - Sirens	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication abilities of emergency services throughout the county	All Hazards	High	Edgar County is currently looking into communications systems to improve communications between emergency operators as well as between emergency operators and the public. Edgar County is focusing on Wireless Emergency Notification System (WENS), StarCom, Motorala Turbo, and even social media to fulfill their needs.
Special Needs Population List	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication abilities of emergency services throughout the county	All Hazards	High	Edgar County is in the process of completing a special needs population list and will continue to maintain it.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Procure a Back-up Water Supply	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Edgar County is in the process of creating memorandums of understanding between generator companies and water companies in the county to insure water treatment facilities do not shut down.
Elevate Low-lying Roads	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	The Edgar County Highway Department is planning to elevate several low-water crossings that significantly inhibit transportation, especially in Symmes Township, including those along 600 N, 450 N, E. 300th Rd., 1360 E, and N. 1600th St. The county Highway Department plans to obtain funding by 2015.
Provide and Publicize Locations of Safe Rooms and/or Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Tornado / Severe Storms	High	Edgar County is currently working on identifying all shelters in the county to provide this information to the public.
Tree Management	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	Tornado / Severe Storms	Low	Edgar County already has a tree trimming and management program and will continue to maintain it.
Cooling/Warming Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Extreme Temperatures	Medium	Edgar County has a list of heating/cooling shelters in the county and plans to make this available to the public by the end of 2013. Edgar County would like to obtain back-up generators for the shelters by the end of 2014.
Burn Ordinance	Goal: Create new or revise existing plans/maps for county Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Wild Fire	Medium	Several municipalities have their own burn ordinance, but Edgar County will consider a county-wide burn ordinance in 2014.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Tire Disposal Ordinance	Goal: Create new or revise existing plans/maps for county Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Wild Fire	Medium	Edgar County addresses tire disposal through the EPA Clean Air Act, the Vector Control Act, and a local nuisance ordinance. Edgar County will consider creating an ordinance specifically for tire disposal in 2014.
Install Snow Fences	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Winter Storms	Medium	Route 1 requires new snow fences for safe travel, and Edgar County plans to replace the snow fences by 2015.
Earthquake Mapping Exercise	Goal: Develop long-term strategies to educate residents on the hazards affecting their community Objective: Improve education and training of emergency personnel and public officals	Earthquake	Low	Encourage county wide participation in an earthquake mapping exercise like the Great American Shake Out
Adopt Earthquake Building Codes	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Earthquake	Low	Edgar County will consider adoption an earthquake ordinance.

Table 5-7: List of Mitigation Strategies Developed at Meeting 4 for Brocton

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards	All Hazards	High	Brocton has a back-up generator for its water treatment plant, but needs an improved generator for the town's primary shelter. 2013 or 2014 is the desired period of completion.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Enhanced Communication Systems/NOAA Weather Radios	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	High	Brocton emergency services need enhanced radio communication and each Brocton resident needs a NOAA weather radio. 2013 is the desired period of completion.
Emergency Alert Systems	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	Medium	Siren removal or disuse due to lack of funding is a possibility in Brocton. In 2013 or 2014, Brocton wishes to obtain funding for emergency siren maintenance.
Establish Emergency Planning Committee	Goal: Create new or revise existing plans/maps for Edgar County Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	All Hazards	Medium	Brocton has already established an emergency planning committee, and will continue to review and update its services in the future.
Procure a Back-up Water Supply	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	Low	Brocton has already completed installation of back-up wells and pumps, and continues to maintain them.
Procure Rescue Equipment and Gear	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Brocton requires new equipment for the Brocton FPD. 2013 or 2014 is the desired completion date.
Mutual Aid Agreements	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	Low	Brocton has already established mutual aid agreements with surrounding communities for fire, police, and ambulance services.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Storm water Management Ordinance	Goal: Create new or revise existing plans/maps for Edgar County Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Flood	High	Brocton is currently in the planning process of revising its storm water management ordinance. Storm water must exit the town more quickly. A possible solutions considered for the ordinance include buying two twelve acre plots on the east and north side of Brocton to store and deter storm water. 2016 is the maximum projected date of completion.
Floodplain Ordinance	Goal: Create new or revise existing plans/maps for Edgar County Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Flood	High	Brocton has passed a resolution for floodplain management and now must create an ordinance, which is projected to occur by the end of 2013.
Improvement of Drainage Ditches	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Brocton requires upgraded drainage ditches so water exits the town more quickly during moderate rainfall. This will be addressed in the ordinance in planning and has a similar timeline, with a maximum expected completion date of 2016.
Back-up Power Source for Critical Facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	Tornado / Severe Storms	Low	Brocton has already established a back-up power source for its critical facilities and continues to maintain it.
Tree Management/Trimming Plan	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	Tornado / Severe Storms	High	Brocton infrastructure requires the equipment and personnel to begin and maintain a tree trimming plan, and plans to complete this goal by 2015.
Provide and Publicize Locations of Safe Rooms and/or Shelters	Goal: Publicize shelter locations Objective: Improve emergency sheltering in the county	Tornado / Severe Storms	High	Brocton requires a shelter, and currently only has the basement of Brocton Christian Church as shelter from tornadoes and storms. 2014 is the expected date to receive funding for the project.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Cooling/Warming Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community	Extreme Temperatures	High	Brocton has a cooling/warming shelter in the town's communications building, but like to improve the generator. 2014 or 2015 is the expected completion date.
Procure Snow Removal Equipment	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	Winter Storms	Low	Brocton owns and maintains snow removal equipment currently.

Table 5-8: List of Mitigation Strategies Developed at Meeting 4 for Chrisman

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Mutual Aid Agreements	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	Low	Chrisman has already established mutual aid agreements with surrounding communities for fire, police, and ambulance services.
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Chrisman already has a back-up generator for its fire department but plans to obtain funding for generators for its schools and water treatment facilities in 2014 since Chrisman does not have a back-up water supply.
Family Disaster Plans & Kits	Goal: Develop long-term strategies to educate residents on the hazards affecting their community Objective: Raise public awareness on hazard mitigation	All Hazards	Low	Chrisman would like obtain funding for family disaster plans & kits. They would advertise and demonstrate at local events in cooperation with Edgar County ESDA and Emergency Services.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
NOAA Weather Radios	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	Medium	Chrisman plans to obtain funding to provide NOAA weather radios to the public by 2015.
Emergency Alert Systems	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	Low	Chrisman already has an automated siren alert system that's supplemented by an automated text and phone system.
Establish Planning Committee	Goal: Create new or revise existing plans/maps for the county Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	All Hazards	Low	Chrisman has already established a local emergency planning committee.
Special Needs Population List	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	Low	Chrisman plans to publicly appeal to its citizens and ask the special needs population or those caring for them to provide data for this list by 2015.
Improve Drainage Ditches & Stormwater Management	Goal: Lessen the impact of Hazards to new and existing infrastructure Objectives: Minimize the amount of infrastructure exposed to flooding	Flood	High	Chrisman plans to clean creek banks and replace old storm drains.
Participate in the NFIP	Goal: Create new or revise existing plans/maps for Edgar County Objective: Support compliance with the NFIP for each jurisdiction in Edgar County	Flood	Low	Chrisman already participates in the NFIP.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Stormwater Management Ordinance	Goal: Create new or revise existing plans/maps for Edgar County Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Flood	Low	Chrisman already has a stormwater management ordinance in place.
Floodplain Ordinance	Goal: Create new or revise existing plans/maps for Edgar County Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Flood	Low	Chrisman already has a floodplain ordinance in place.
Provide and Publicize Locations of Safe Rooms and/or Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Tornado / Severe Storms	High	The Chrisman emergency planning team consistently reminds Chrisman citizens of the local shelters available to them.
Anchoring of Manufactured Homes and Exterior Attachments	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Tornado / Severe Storms	Low	Chrisman already has an ordinance in place requiring manufactures homes to be anchored.
Tree Management/Trimming Plan	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	Tornado / Severe Storms	Low	Chrisman already has an ordinance in place requiring limbs to be cleared from power lines and for low-hanging limbs to be cleared.
Ordinance for Higher Construction Standards/Techniques in Regards to Severe Storms	Goal: Create new or revise existing plans/maps for Edgar County Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Tornado / Severe Storms	Low	Chrisman already has an ordinance in place requiring residents to take measures against making their property storm-resistant.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Cooling/Warming Shelters	Goal: Publicize shelter locations Objective: Improve emergency sheltering in the county	Extreme Temperatures	Low	Chrisman already has a list of heating/cooling shelters in the county and plans to make this available to the public.
Burn Ordinance	Goal: Create new or revise existing plans/maps Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Extreme Temperatures /Wild Fire	Low	Chrisman already has burn ordinances in place and will continue to enforce it in an effort to prevent wildfires.

Table 5-9: List of Mitigation Strategies Developed at Meeting 4 for Hume

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Hume requires a generator for the town's shelters, including the Hume FPD, the community center, and its three churches. 2014 is the planned completion date.
NOAA Weather Radios	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All Hazards	High	Not all Hume residents have NOAA weather radios, and the town wishes to obtain funding so each Hume resident can have one. Hume plans to obtain this funding by 2014.
Family Disaster Plans and Kits	Goal: Develop long-term strategies to educate residents on the hazards affecting their community Objective: Raise public awareness on hazard mitigation	All Hazards	High	Hume would like to host a forum with its residents to discuss the importance of creating a family disaster plan and kit. This forum is planned to occur by 2014.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Establish Emergency Planning Committee	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	All Hazards	High	Hume would like to establish an emergency planning committee, especially to discuss, plan, and obtain funding for its flooding problem. Hume plans to assemble this committee by 2014.
Procure a Back-up Water Supply	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Hume wishes to establish an emergency fund to obtain water from an outside source in the event a disaster disrupts their potable water supply.
Procure Rescue Equipment and Gear	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All Hazards	High	Hume is seeking out grants to fund new and/or improved gear and equipment for its fire department.
Improvement of Drainage Ditches	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	Medium	Hume wishes to obtain grants to repair or replace all collared storm drains and to remove debris from all drainage ditches. 2014 is the expected date of obtaining the grants.
Participate in the NFIP	Goal: Create new or revise existing plans/maps for Edgar County Objective: Support compliance with the NFIP for the community	Flood	High	The village board wishes to pass a resolution for the community to join the NFIP. Hume plans to pass the resolution in 2014.
Stormwater Management Ordinance	Goal: Create new or revise existing plans/maps Objective: Review and update existing, or create new community plans and ordinance to support hazard mitigation	Flood	High	Hume would like to establish a committee of board members to oversee the development of stormwater management ordinances. Funding for replacement and repairs to storm drains is high on the priority list. Hume plans to develop a committee by 2014.

Table 5-10: List of Mitigation Strategies Developed at Meeting 4 for Kansas

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Enhanced Communication Systems/NOAA Weather Radios	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	High	Kansas would like a reverse 911 system for flooding and hazmat incidents.
Special Needs Population List	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication abilities of emergency services throughout the county	All Hazards	Medium	Kansas would like to seek funding to establish a special needs population list. Kansas will work with residents to identify residents with special needs and create maps to pinpoint their locations.
Procure a Back-up Water Supply	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	Medium	Kansas has identified the need to procure funding for a back-up water supply - particularly in the event of a drought or earthquake.
Provide and Publicize Locations of Safe Rooms and/or Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Tornado / Severe Storms / Winter Storms	High	Kansas will work on identifying all shelters in the community and provide this information to the public.
Cooling/Warming Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community	Extreme Temperatures	High	Kansas would like to seek funding for cooling/warming shelters.

Table 5-11: List of Mitigation Strategies Developed at Meeting 4 for Metcalf

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Procure a Back-up Water Supply	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Metcalf wishes to establish an emergency fund to obtain water from an outside source in the event that a disaster disrupts their potable water supply.
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Metcalf requires a generator for the town's shelters and community center.
Improvement of Drainage	Goal: Lesson the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Metcalf is drained by degraded drainage line that is becoming non-functional. Metcalf needs to replace the drainage pipe by 2015, and has already completed a DCEO-funded HWC study in 2000 and a legislator-funded mapping and conditional assessment in 2009. Metcalf would also like to remove all debris from drainages. In addition, Metcalf would like to update all tiles throughout the village.
Procure Snow Removal Equipment	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	Winter Storms	High	Metcalf currently owns and maintains snow removal equipment. The equipment is 30 years old and needs to be replaced.

Table 5-12: List of Mitigation Strategies Developed at Meeting 4 for Paris

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Public Education/Awareness	Goal: Develop long-term strategies to educate county residents on the hazards affecting their community Objective: Raise public awareness of hazard mitigation	All Hazards	High	Provide public education of reverse 911 procedures for where shelters are located; this activity is currently in progress
Provide and Publicize Locations of Safe Rooms and/or Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	All Hazards	High	Build underground disaster shelters and storm shelters in 2014, especially in trailer courts. Mandate all new commercial buildings to have disaster shelters; this activity is currently in progress. Upgrade supplies and provide kits containing first aid, lights, and food in each shelter
Stormwater Management and Floodplain Ordinances	Goal: Create new or revise existing plans/maps for Edgar County Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Flood	High	Update floodplain and storm water management ordinances in 2014 with the goal to improve drainage problems, especially for runoff in downtown Paris
Installation of Pumping Station	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Obtain funding in 2014 to install a pumping station to address poor drainage in downtown Paris, especially Jasper St., Water St., and Madison St.
Improvement of Drainage Ditches	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Obtain funding in 2014 to purchase additional street sweepers to keep drainage lines clean in downtown Paris, or to outsource regular drainage line clearance

Table 5-13: List of Mitigation Strategies Developed at Meeting 4 for Redmon

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Public Education/Awareness	Goal: Develop long-term strategies to educate Edgar County residents on the hazards affecting their community Objective: Raise public awareness of hazard mitigation	All Hazards	High	Redmon has scheduled a public town-wide meeting in August 2013 to make the community aware of its risk, compile a special needs population list, publicize its intention to build a heating/cooling shelter, and discuss ordinances addressing hazards.
Mutual Aid Agreements	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services	All Hazards	High	Redmon has already established mutual aid agreements with surrounding communities.
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Redmon would like a back-up generator as part of its heating/cooling shelter scheduled for 2014, as well as a back-up generator for the fire station and church, which also serve as shelters.
Special Needs Population List	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county	All Hazards	High	Redmon plans to compile a special needs population list for the community during or shortly after its August 2013 town-wide meeting.
Procure a Back-up Water Supply	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Redmon currently does not have a back-up water supply in the event of a water-treatment plant failure during a hazard, and would like to acquire a portable potable water tank in 2014.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Procure Rescue Equipment and Gear	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Redmon plans to obtain updated rescue equipment for its fire department in 2014.
Culvert Replacement	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Redmon plans to evaluate its culverts in 2014 to determine if any culverts are in danger of failure and need to be replaced.
Improvement of Drainage Ditches	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Redmon is currently and will continue to maintain its drainage, including clearing debris, adding drainage lines, etc.
Provide and Publicize Locations of Safe Rooms and/or Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Tornado / Severe Storms	High	During the August 2013 town-wide meeting, Redmon will publicize the location of its shelters, including the fire station and the church.
Anchoring of Manufactured Homes and Exterior Attachments	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Tornado / Severe Storms	High	Redmon will review the county and local ordinances addressing this issue during the August 2013 town-wide meeting, and discuss the possibility of requiring anchoring on manufactured homes.
Back-up Power Source for Critical Facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazard	Tornado / Severe Storms	High	In addition to the back-up generators Redmon desires for the church and planned heating/cooling shelter, Redmon would like a back-up generator for the Redmon Fire Department in 2014.
Cooling/Warming Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Extreme Temperatures	High	Redmon would like to build a community center for use as a heating/cooling shelter, and plans to build it in 2014.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Burn Ordinance	Goal: Create new or revise existing plan/maps for the county Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Extreme Temperatures/Wild Fire	High	Redmon has a burn ordinance and will continue to enforce it in an effort to prevent wildfires.
Tire Disposal Ordinance	Goal: Create new or revise existing plan/maps for the county Objective: Review and update existing, or create new community plans and ordinances to support hazard mitigation	Wild Fire	Medium	Redmon plans to organize communities and local groups to set up tire disposal days and sites. Expected date of completion is 2014.
Procure Snow Removal Equipment	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazard	Winter Storms	High	Redmon would like to replace their 30+-year-old snow truck with a newer vehicle by 2016.

Table 5-14: List of Mitigation Strategies Developed at Meeting 4 for Vermilion

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects on hazards	All Hazards	High	Vermilion would like a back-up generator to power the entire village in the event electricity is unavailable for several days. Vermilion plans to obtain this by 2016.
Improvement of Drainage	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Vermilion floods frequently due to poor drainage, and plans to install a new, enlarged sewer main by 2018 to help prevent future flooding.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Back-up Power Source for Critical Facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	Tornado / Severe Storms	High	Vermilion plans to install a back-up generator for the water treatment plant there by 2018.
Cooling/Warming Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Extreme Temperatures	High	Vermilion plans to establish a heating/cooling shelter by 2016, especially for use by the elderly.

Table 5-15: List of Mitigation Strategies Developed at Meeting 4 for Edgar County Schools*

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Back-up Generators	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards	All Hazards	High	Shiloh, Paris High, and Crestwood schools plan to install back-up generators by 2015 so those schools can serve as community shelters.
Improvement to Drainage Ditches	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Flood	High	Crestwood and Shiloh schools plan on installing drainage tile and roof and perimeter drains in 2013.
Bury Power Lines	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Tornado / Severe Storms	High	Crestwood school plans to bury overhead power lines by 2015.
Provide and Publicize Location of Safe Rooms and/or Shelters	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the county	Tornado / Severe Storms	High	Paris High School plans to work with county architects, schools, the county engineer, and the Edgar County ESDA to build a reinforced shelter adjacent to the high school.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Priority	Comments
Harden Infrastructure	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards	Earthquake	High	Paris High School plans to harden each structure on campus by 2015 so it can serve effectively as a shelter.
Install Snow Fences	Goal: Lesen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage cause by secondary effects of harzards	Winter Storms	Low	Shiloh School plans on installing snow fences snow for safe travel.

*Representatives from a few of the school districts of Edgar County suggest several mitigation items specific to schools in the county.

The Edgar County Emergency Management Agency will be the local champion for the mitigation actions. The County Commissioners and the city and town councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions.

5.5 Multi-Jurisdictional Mitigation Strategy

As a part of the multi-hazard mitigation planning requirements, at least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment and for each jurisdiction covered under this plan.

Each of the eight incorporated communities within and including Edgar County was invited to participate in brainstorming sessions in which goals, objectives, and strategies were discussed and prioritized. Each participant in these sessions was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities and counties. All potential strategies and goals that arose through this process are included in this plan. The county planning team used FEMA's evaluation criteria to gauge the priority of all items. A final draft of the disaster mitigation plan was presented to all members to allow for final edits and approval of the priorities.

Section 6 Plan Maintenance

6.1 Monitoring, Evaluating, and Updating the Plan

Throughout the five-year planning cycle, the Edgar County Emergency Services & Disaster Agency (ESDA) will reconvene the mitigation planning team to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held in 2018 to address the five-year update of this plan. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If the need for a special meeting, due to new developments or a declared disaster occurs in the county, the team will meet to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

The committee will review the county goals and objectives to determine their relevance to changing situations in the county. In addition, state and federal policies will be reviewed to ensure they are addressing current and expected conditions. The committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified. The parties responsible for the various implementation actions will report on the status of their projects, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies should be revised.

Updates or modifications to the MHMP during the five-year planning process will require a public notice and a meeting prior to submitting revisions to the individual jurisdictions for approval. The plan will be updated via written changes, submissions as the committee deems appropriate and necessary, and as approved by the county commissioners.

The GIS data used to prepare the plan was obtained from existing county GIS data as well as data collected as part of the planning process. This updated Hazus-MH GIS data has been returned to the county for use and maintenance in the county's system. As newer data becomes available, these updated data will be used for future risk assessments and vulnerability analyses.

6.2 Implementation through Existing Programs

The results of this plan will be incorporated into ongoing planning efforts since many of the mitigation projects identified as part of this planning process are ongoing. Edgar County and its incorporated jurisdictions will update the zoning plans and ordinances listed in Table 5-3 as necessary and as part of regularly scheduled updates. Each community will be responsible for updating its own plans and ordinances.

6.3 Continued Public Involvement

Continued public involvement is critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the ESDA Coordinator and forwarded to the mitigation planning team for discussion. Education efforts for hazard mitigation will be ongoing through the ESDA. The public will be notified of periodic planning meetings through notices in the local newspaper. Once adopted, a copy of the MHMP will be maintained in each jurisdiction and in the county ESDA Office.

Acronyms

A B **C** **D** **E** **F** **G** **H** **I** J K L **M** **N** O **P** Q **R** **S** T **U** V W X Y Z

A

AEGL – Acute Exposure Guideline Levels
ALOHA – Areal Locations of Hazardous Atmospheres

C

CERI – Center for Earthquake Research and Information
CRS – Community Rating System

D

DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DMA – Disaster Mitigation Act of 2000

E

EMA – Emergency Management Agency
EPA – Environmental Protection Agency
ERPG – Emergency Response Planning Guidelines
ESDA – Emergency Services Disaster Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map

G

GIS – Geographic Information System

H

Hazus-MH – Hazards USA Multi-Hazard
HMGP – Hazard Mitigation Grant Program
HUC – Hydrologic Unit Code

I

IA – Individual Assistance
IDOT - Illinois Department of Transportation
IEMA – Illinois Emergency Management Agency
IUPUI – Indiana University – Purdue University, Indianapolis

M

MHMP – Multi-Hazard Mitigation Plan
MOU – Memorandum of Understanding

N

NCDC – National Climatic Data Center
NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration

P

PA – Public Assistance
PPM – Parts Per Million

R

RPI – Risk Priority Index

S

SIU – Southern Illinois University Carbondale
SPC – Storm Prediction Center

U

USGS – United States Geological Survey

Appendices

Appendix A. MHMP Meeting Minutes

Edgar County Multi-Hazard Mitigation Planning Meetings

Assembly of the Edgar County Planning Team Meeting 1
Plan Directors: SIU Geology Department and IUPUI - Polis

Meeting Date: 09/12/2012

Meeting Time: 5:30PM

Place: 4H Fairground Multi-Purpose Building, 319 E. Elliot Street, Paris, IL 61944

Planning Team/Attendance: 26 – List attached

Introduction to the Multi-Hazard Mitigation Planning Process

The meeting is called to order

Narrative: A power-point presentation was given by Beth Ellison. She explained that this project is in response to the Disaster Mitigation Act of 2000. The project is funded by a grant awarded by FEMA. A twenty-five percent match will be required from the county to fund this project. The county match will be met by sweat equity and other county expenses. The sweat equity will be an accumulation of time spent at the meetings, on research assignments, surveys, along with the time spent reviewing and producing the planning document.

Beth Ellison introduced the Pre-Disaster Mitigation Website to the planning team. A username and password was given to the planning team, which will grant them access to the web site (Username: Illinois_PDM, password: illini). The web site is used to schedule meetings, post contact information and download material pertaining to the planning process.

Beth divided the planning project into five to six meetings. At the 1st meeting, the planning team will review critical facility maps. The planning team will be asked to research and verify the location of all critical facilities within the county. Beth stated that public participation is very important throughout the planning process. He explained that all of the meetings are open to the public but there will be a particular effort made to invite the public to the 3rd meeting. At that meeting, the SIUC Geology Department will present historic accounts of natural disasters that have affected this area. At the 2nd meeting the discussion will focus on natural disasters that are relevant to this area. These hazards will be given a probability rating and ranked by their occurrence and potential level of risk. The SIUC Geology Department will research these hazards and present them to the planning team. The 3rd meeting is publicized in order to encourage public participation. The SIUC Geology Department will produce a risk assessment in draft form (each planning team member will get a copy) as well as present strategies and projects that FEMA and other counties have undertaken for the planning team to review. The 4th meeting consists of a brain storming session focused on disasters that were analyzed in the risk assessment report. The Planning Team will list strategies and projects that could be implemented to mitigate the potential hazards that threaten the county. FEMA requires that for every identified hazard, a strategy to mitigate the loss and damage must be in place. The strategies may range from educational awareness to hardening a building or building a levee. After the 4th meeting the plan will be in its final draft form. At the 5th meeting the planning team will need to review the plan prior to sending it to IEMA. IEMA will review the plan and will make recommendation to it as they see fit, then it is submitted to FEMA for review and approval. Once the plan has been submitted to FEMA, local governments are eligible to apply for grants to mitigate these established hazards. After FEMA approves the plan, it is sent back to the Planning Team. At the 6th meeting the Planning Team will present the Multi-Hazard Mitigation Plan to the County Board for adoption. Incorporated communities must either adopt the county plan or prepare its own plan, in order to access mitigation assistance from FEMA. The communities are encouraged to participate and contribute to development of the plan. Once the County Board has adopted the plan, each incorporated community will have the opportunity to adopt the plan as well.

Beth Ellison then assigned research homework arranged by categories to individual planning team members to locate missing or incorrect critical facilities.

Lastly, Beth Ellison fielded any questions from the planning team about the process of mitigation planning.

Meeting was adjourned.

Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)	
CHAIRMAN	Rodney R Webber	RRW	Plumber / MAYOR		269-2053
Paris	Danette Young	DY	Principal / Crestwood	dyoung@crestwood.k12.il.us	465-5391
Edgar	Beverly Hoeksema	BM	Supervisor of Assessments	sa-bm@edgarcountyillinois.com	466-7418
Edgar	Deena Hasler	DLH	Deputy S/A	sa-dh@edgarcountyillinois.com	466-7418
Embarrass	RALPH E. CRAIG	REC	SUPERVISOR		217-822-2474
Dorchester	Don McCAMP	DMC	COMM.		217-822-3377
Vermilion	Tammy Johns	TJ	Clerk	villagevermilion@hotmail.com	217-465-4733
PARIS	John Holley	JGH	RED CROSS	JOHN14652@EXCITE.com	217-251-3140
CFPD	Mike Maruk	mm	Chief Chairman Fire Prot. Dist	CFPD@midwestfiber.com	217-822-4505
	CHRIS SCHMITZ		POLS CTR	SCHMITZC@IUPUI.EDU	

Multi-Hazard Mitigation Planning Meeting Attendance

Meeting 1 – Edgar County

Please print clearly

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)	
COUNTY BOARD	JEFF VOIGT		BOARD MEMBER	U HAUL	
CITY OF PARIS	PAUL RUFF		ADMIN.	465-7601	
ECRD	Adam Lawson		emergency mgmt	465939	
Edgar	Donald G. Wiseman		County Treasurer	office 466-7446	cell 822-1718
	THOMAS E. GRESSON		SR. DISASTER RECOVERY ADMINISTRATOR	OFFICE 217 465 6600	THOMAS-GRESSN@AOL.COM
Edgar	Ross Carroll		Edgar County GIS		
SIU	Beth Ellison		PROJECT MANAGER		

Multi-Hazard Mitigation Planning Meeting Attendance

Please print clearly

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)
Embarrass Twp	Mike Wilkey	MW	Road Commissioner	217-384-2457
Kansas Town.	Jim Laugher	F.	Road commissioner	217-218-5920
SYMMES	JEFF SWITZER	A	Road Commissoner	217 463-1271
	Warren Spray		Dist 76/mayo	217-466-3050
	Jeremy Larson	JL	Principal Mayo	217-466-3050
	Mike Pine	mP	Redmon Village Board	217-884-2372
	Mark Cox	MEC	Assistant Principal	217-466-1175
ECPHD	Jerica Robinson	JR	Environmental Health Sp	217-251-5083
THE POLIS CENTER IUPUI	JOHN HAYES	JH	GIS ANALYST, IUPUI	317-278-4915

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IEMA Multi-Hazard Mitigation Plan

Assembly of the Edgar County Planning Team Meeting 2:
Plan Directors: SIU Geology Department and IUPUI - Polis

Meeting Date: October 23, 2012

Meeting Time: 6:30 PM

Place: 4H Fairground Multi-Purpose Building, 319 E. Elliot Street, Paris, IL 61944

Planning Team/Attendance: 33 – Sheets Attached

Historical Hazards, their Probability, and Hazard Ranking

The meeting was called to order.

Elizabeth Ellison began the meeting by reintroducing the objectives of the multi-hazard mitigation plan (MHMP). Since the Disaster Mitigation Act passed in 2000, FEMA requires that a county maintain an MHMP to maintain eligibility for disaster assistance. Elizabeth stated that the objective of this meeting was to list and to prioritize disasters that present significant risk to Edgar County.

Elizabeth provided the planning team with a hazard-identification handout to direct the focus of the hazard prioritization process. Planning team members ranked the risk for each hazard in Monroe County using FEMA's risk priority index (RPI), which is the product of hazard probability and magnitude.

Edgar County produced the following rankings:

#1: Tornado
#2: Flooding
#3: Haz-Mat Release
#4: Winter Storm
#4: Drought
#6: Earthquake

Elizabeth asked the planning team to verify the locations, dates, and magnitudes of historical hazards mapped by Southern Illinois University at Carbondale (SIUC). The planning team noticed no errors on the map. Elizabeth also recorded scenarios for each hazard that the Edgar County planning team wishes to see modeled for the MHMP.

The planning team agreed to verify locations of critical facilities by the next meeting.

Page 1

Edgar Meeting 2

Multi-Hazard Mitigation Planning Meeting Attendance

Please print clearly

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)	
Chrisman	Rodney R. Wolfe	RRW	Mayor		269-2053
Paris	Danette Young		Principal of Crestwood	dyoung@crestwood.k12.il.us	465-5391
Edgar County	Beverly ~~Markey~~ Markey	BM	Supervisor of Assessment	sa_bm@edgarcountyillinois.com	466-7418
Edgar County	Deena Hasler		Deputy Supervisor of Assessment	sa_dh@edgarcountyillinois.com	466-7418
Embarrass	Ralph E. Craig	REC	Supervisor		(217) 822-2476
Grandview	Don W. Camp		Communications		(217) 822-3272
Vermilion	Tommy Johns		Clerk	villagevermilion@hotmail.com	(217) 465-4733
Paris	John Holley		Red Cross	john14652@excite.com	(217) 251-3140
Chrisman FPD	Mike ~~Marvin~~ Marvin	MM	Chief, Chrisman FPD	cfpd@midwestfirst.com	(217) 822-4505
	Chris Schmutz		POLIS Center	schmutz@iupui.edu	

ROUND TRIP Mileage

29 — 20 — 38 mi — 80 mi

Edgar Meeting 2

Multi-Hazard Mitigation Planning Meeting Attendance

ROUND TRIP MILES

Please print clearly

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		
Edgar County	Jeff Voigt		County Board Member			30 mi
Paris	Paul Ruff	PR	Administrator		465-7601	2½ mile
Edgar County PD(?) Highway Dept	Aaron Lawson		???		465-9139	
Edgar County	Donald G. Wiseman		County Treasurer		466-7446	
	Thomas B. Green		Senior Recovery Disaster Recovery Administrator	thomas_green@nal.com	(217) 465-6600	
Edgar County	Ross Carrell	RC	Edgar County GIS		217 251 8256	30
EdgarCo ESDA	ShirlyNN Kracmer	SK	Asst. Coordinator	parisesda@midwestfirst.com	466-3180 (217)	14mi
ESDA	DYANO F. DOZ	DF	Coordinator	parisesda@midwestfirst.com	217-466-3180	
VILLAGE OF HUME	RANDAL H. WOOD	RHW	VILLAGE BOARD MEMBER		217-887-2201 CELL# 217-822-1267	50
SHILOH TOWNSHIP	RANDY GRAFTON	RG	SUPERVISOR	rgrafton@consolves.net CELL	251-9050	36

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Edgar Meeting 2

Multi-Hazard Mitigation Planning Meeting Attendance

ROUND TRIP Miles

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		
Embarrass	Mike Wilkey		Road Commissioner		(217) 354-2457	
Kansas	Jim Lauher	JL	Road Commissioner	~~28~~	(217) 218-5920	28
Symmes	Jeff Switzer	JS	Road Commissioner		(217) 463-1271	14
	Warren ~~Sq~~ Sperry		District 76 Mayor (?)		(217) 466-3050	
	Jeremy Larson		Principal Mayor		(217) 466-3050	
Redmon	Mike Pine	MP	Redmon Village Board	mpine92@gmail.com	(217) 884-2372	20
	Mark Cox		Assistant Principal		(217) 466-1175	
Edgar County PHD	Jerica Robinson	JR	Environmental Health Specialist	jrobinson@ecphd.org	(217) 251-5083	4
POLIS Center	John Hayes		GIS Analyst		(217)278-4915	

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pg 2

Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		Round Trip Mileage
Edgar County Health Dept.	Erica Whitington		Edgar County Health Dept		465-2212	1 mi
~~Emergency~~ Emergency Services & Disaster Agency						~~32~~
Surveillance coordinator	Ronald R. Kinnaman	RRK	Flood Comm.		217-666-8087 217-822-3083	32
	JIMMY WELLS	JW	AIRPORT MANAGER		217-465-8474	15 M.
	DANIEL BISHOP	DB	SAFETY DIRECTOR/ PARIS Comm. Hosp.	dbishop@parisil.com	217-465-4141 x340	1
E.C.H.D	Joshua Knight	JK		JKnight@edgarcountyhighway.org	217 465 9139	5 mi

Page 4

Edgar
Meeting 2

Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		Round TRIP ~~Miles~~
Vermilion	Jean McCoy	JMC	MAYOR	WSMcCoy@cellinet.net	(217) 275-3316	20 miles
Metcalf	Cheryl Gill	CG	Mayor	tigertears.cheryl@gmail.com	217-822-1984	46 miles
Hunter	Mark Davis		Laborer Hunter township		217-465-4001	2 miles
Embarrass Twp	~~Mike~~ McWilkey	MW	HC			30
ECSO	STEVE GUESS	SG	CHIEF DEPUTY ECSO			100
Paris Unit 4	Lorraine Bailey	LB	Superintendent/Unit4	lbailey@crestwood.k12.il.us	217-465-5391	3
Ross township	Ben Jenness II	BJ	Trustee	ben@frobhrisman.com		26 miles
Ross	Chad Porter	CAP	Head of Maintenance	Chad.a.Porter@Comcast.net	269-2513	26 miles
Shiloh CUSD#1	Terence Sullivan	TS	Technology Director	sullivante@shiloh1.us	217 887 2354	45 mi
Edgar Township	Kenneth D. Kraemer	KDK	Road Commissioner	kekraemer@comcast.net	217 822-7747	14 mi
Prairie Township	Bob Botts	MA	Road Comm.		217 815-5484	40 mi

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IEMA Multi-Hazard Mitigation Plan

Assembly of the Edgar County Planning Team Meeting 3:
Plan Directors: SIUC Geology Department and IUPUI - Polis

Meeting Date: April 17, 2013

Meeting Time: 6:00 PM

Place: 4H Fairground Multi-Purpose Building, 319 E. Elliot Street, Paris, IL 61944

Planning Team/Attendance: 50 – Sheets Attached

Public Meeting and the County Risk Assessment

The meeting was called to order.

Elizabeth Ellison opened the meeting with an overview of the planning process and the roles of SIU and the Polis Center. Then she explained the topics and objectives of the current meeting. Elizabeth first presented the planning team with the list of hazards that the team ranked by their level of risk during the previous meeting. She also presented a power point presentation on the history of disasters in Edgar County. This included covering each hazard that the County had focused on, the history of each, and possible mitigation strategies for each disaster. He defined mitigation as the act of avoidance and preparedness.

A draft of Chapter 4 of the Edgar County Mitigation Plan and a copy of Mitigation Ideas, produced by FEMA Region 5 in July 2002, were given to each of the planning team members for review. Elizabeth explained the contents of the booklet and that each planning team member should return to meeting 4 with three mitigation strategies for each of the hazards identified by the planning team.

Elizabeth Ellison then asked the audience for questions or comments. After some discussion about the plan and how it would affect the community and its residents, she thanked those who came and closed the presentation.

Meeting was adjourned.

Mitigation Meetings 4/17/13 6:00pm

NAME	JURID.	MILEAGE
Rodney L Wolfe	Mayor Chairman	26
Don Lively	Hunter Township	4
Randal H. Wood	Hume Village Board	50
Ralph E. Craig	Embarrass Twp	45
Jamey Littleton	Paris Police Dept	4
Dennis Cary	Village of Brocton - Brocton Fire	20
Kit Kirby	Edgar ESDA	4
Bob Hackett	Kansas Drainage Dist. # 2	30
Ron Baker	" " " "	30
Beth Holbrough	Shiloh CUSD #1	50
Jean McCoy	Village of Hunsinger	25
Cheryl L. Gill	Village of Metcalf	46
John Holley	RED Cross	4
Lorraine Bailey	Paris Unit 4	4
Teresa Back (council)	Village of Redmon	20
Chad Porter	Chrisman School District	28
Mike Gark	Eker STAR	20
Daniel Bishop	Paris Community Hosp.	3
Ben Jerress Jr.	Ross Township	26
Alan Zuber	Edgar Co Board	15
~~Jimmy Wells~~	~~City of Chrisman~~	~~28~~
Tony Jones	Brouillettes Creek Township	26
Jerica Robinson	Edgar Co. Public Health Dept	860
Erica Whitington	Edgar Co. Public Health Dept.	10
STEVE GAESS	EDGAR CO. SHERIFFS OFFICE	100
Beverly Markley	Edgar Co. S.A.	18
TREE HOIST	CO. BOARD	30

NAME	JURID	Round Trip Mileage
THAD CARY (CHIEF)	REDMON FIRE PCPFD	22
Kris McGinness	Redmon Fire Buck Township	22
Karl Farnham	Co Board	28
Susan Soxton	Village of Kansas	26
Mary Frogge	" "	26
David L. Stanfield		34
Mike Pine	Village of Redmon	22
~~Kenneth Brown~~	Edgar Twsp	15
Rhonda Williamson	Edgar County Health Dept	14
Don Wiseman	Edgar Co. - PIO	2 miles
Brian Gates	City of Paris - Fire Chief	4
Duane Fidler	ESDA	26
Sharlynn Kraemer	Asst Coordinator ESD	15

NAME	JURD	Mileage
Randy Grafton	Shiloh Township	35
Earl Shaughnessy	Edgar Co. Ambulance	6
Jeff Switzer	Symmes T. / Oliver Fire	7
Chris Patrick	County Board Chairman	15
Ben H. Jenness	County Board Vice Chairman	30
Paul Ruff	City of Paris	5
Randy Lawson	Edgar County	15
C.M. Hellegg	County Board Member	5
Kevin M. Conover	Clark-Edgar Rural Water	70
J.D. Kesler	Vigo County Emergency Mngt.	24
Jimmy Wells	Edgar County Air Port	12

IEMA Multi-Hazard Mitigation Plan

Assembly of the Edgar County Planning Team Meeting 4:
Plan Directors: SIUC Geology Department and IUPUI – Polis

Meeting Date: June 11, 2013

Meeting Time: 6:00 PM

Place: 4H Fairground Multi-Purpose Building, 319 E. Elliot Street, Paris, IL 61944

Planning Team/Attendance: 43 – Sheets Attached

Determining Hazard Mitigation Strategies

The meeting was called to order.

Elizabeth began by explaining that the meeting would cover mitigation strategies that the planning team believed would prevent or eliminate the loss of life and property. She explained that the planning team should not make any reservations in the form of money or resources when developing this list. Elizabeth directed the planning team to be specific about the location or focus area of a strategy whenever possible. The planning team listed at least two new or current on-going mitigation strategies for each hazard addressed in the plan. The planning team then prioritized mitigation actions. A rating of high, medium, or low was assessed for each mitigation item.

Elizabeth Ellison thanked everyone for attending the meeting and stated that if the planning team members needed extra mitigation strategy handbooks that they were available upon request.

Multi-Hazard Mitigation Planning Meeting Attendance

Please print clearly

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)	
Chrisman	Rodney R. Wolfe		Mayor	269-2053	
Paris	Danette Young		Principal of Crestwood	dyoung@crestwood.k12.il.us	465-5391
Edgar County	Beverly Markey	24	Supervisor of Assessment	sa_bm@edgarcountyillinois.com	466-7418
Edgar County	Deena Hasler		Deputy Supervisor of Assessment	sa_dh@edgarcountyillinois.com	466-7418
Embarrass	Ralph E. Craig		Supervisor		(217) 822-2476
Grandview	Don W. Camp		Communications		(217) 822-3272
Vermilion	Tommy Johns		Clerk	villagevermilion@hotmail.com	(217) 465-4733
Paris	John Holley		Red Cross	john14652@excite.com	(217) 251-3140
Chrisman	Mike Marvin		Chief, Chrisman FPD	cfpd@midwestfirst.com	(217) 822-4505
	Chris Schmutz		POLIS Center	schmutz@iupui.edu	

Page 1

Multi-Hazard Mitigation Planning Meeting Attendance

Please print clearly

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		
Edgar County	Jeff Voigt		County Board Member		30 miles	
Paris	Paul Ruff		Administrator		465-7601	3
Edgar County	Aaron Lawson		Police Department		465-9139	10
Edgar County	Donald G. Wiseman		County Treasurer		466-7446	
	Thomas B. Green		Senior Recovery Disaster Recovery Administrator	thomas_green@nal.com	217-465-6600	
Edgar County	Ross Carrell		Edgar County GIS		217-251-8250	
Edgar County	Sharlynn Kraemer		~~Assistant Coordinator,~~ ESDA	~~SKraemer@comwares.com~~ parisesda@midwestfirst.com	217-466-3180	14
Edgar County	Duane Fidler		Coordinator, ESDA	~~edgar2~~ kdfidler@gmail.com ~~parisesda@midwestfirst.com~~	217-466-3180	26
Hume	Randal Wood		Village Board Member	RFwood6992@YAHOO.COM	217-822-1257 (cell); 217-887-2201	26
Shiloh	Randy Crafton		Supervisor	rgrafton@comwares.net	217-251-9050	

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Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		Miles
Embarrass	Mike Wilkey		Road Commissioner		(217) 354-2457	
Kansas	Jim Lauher		Road Commissioner		(217) 218-5920	28 m.
Symmes	Jeff Switzer		Road Commissioner	14	(217) 463-1271	
	Warren Sperry		District 76 Mayor (?)		(217) 466-3050	
	Jeremy Larson		Principal Mayor		(217) 466-3050	
Redmon	Mike Pine		Redmon Village Board	mpine92@gmail.com	(217) 884-2372	20
	Mark Cox		Assistant Principal		(217) 466-1175	
Edgar County	Jerica Robinson		Environmental Health Specialist	jrobinson@ecphd.org	(217) 251-5083	44
POLIS Center	John Hayes		GIS Analyst		(217)278-4915	

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Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		Miles
Ross	Ben Jenness		Trustee	ben@fnbchrisman.com		
Ross	Chad Porter		Head of Maintenance	chad.a.porter@comcast.net	217-269-2513	
Shiloh	Terence Sullivan		Technology Director	sullivantd@shiloh1.us	217-887-2364	52 mi
Edgar (township)	Kenneth Kraemer		Road Commissioner	kekraemer@comewares.net	217-822-7747	
Prairie	Bert Boots		Road Commissioner		217-215-8484	
Edgar County	Kit Kirby	KK	Edgar - ESDA		217-466-3180	
Hunter Township	Dori Lientz	DL			217-463-1086	2
Brr Creek Township	Billy R Hardas		Trustee		812-264 3313	14 28
Buck Township	KARLS MCGINNESS		Road Commissioner	Kmcginness@frontier.net	217-822-2073	22
ECSO	Edward Mothy		SHERIFF	Edward Mothy @ EdgarCounty Illinois.com	217 465 4166	6

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Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)		Miles
Edgar County	Erica Whitington		Edgar County Health Department		217-465-2212	5 miles
	Ronald J. K.				217-666-3087; 217822-3087	
	Jimmy Wells		Airport Manager		217-465-8474	
HOSPITAL	Daniel Bishop		Safety Director of Paris Community Hospital	dbishop@pchfmc.com	217-465-4141 x240	2
Edgar County	Joshua Knight		Edgar County Highway Department	jknight@edgarcountyhighway.org	217-465-4139	
Vermilion	Jean McCoy		Mayor	wjccoy@clllnel.net	217-275-3316	25 miles
Metcalf	Cheryl Gill	CG	Mayor	tigertears.cheryl@gmail.com	217-822-1984	42 mi
Hunter	Mark Davis		Laborer		217-465-4001	
Embarras	Mike Wilkey		H.C.			
ECSO	Steve Guess		Chief Deputy			100 MI.
Paris	Lorraine Bailey		Superintendent	lbailey@crestwood.k12.il.us	217-465-5391	4

Page 4

Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)	
EGER	Larry Bariss				24
EcHD	Jim McKeehan				2
	August Griffin				4
	Mike Clark		EnerSTAR	mclark@enerstar.com	20
	Dennis Cary		Mayor	Village of Brocton	40
	Julie Cary		Resident	Village of Brocton	40

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Multi-Hazard Mitigation Planning Meeting Attendance

Jurisdiction Name	Print Name	Initial	Job Title/Company	Contact Information (e-mail address and/or phone number)	
	Dan Brown	DBB	County Board		2
	Mike McCoskey	MM	Road Commissioner		20
	Bob Boots	BB	Ag Comm		18
	Chris Patrick	CP	Edgar County Board Chairman		10
	Mike Hecht	MH	Edgar Co Emergency Mgmt		4
	Doug Markley	DM	Road Commissioner		20
	Teresa Roach	TR	Village Council Village of Redmon		20
	Bill Ingram	WI	Paris Township		2
	Susan Saxton	SS	Kansas Village		26
	Ben Nenness		County Board		32

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Edgar County Emergency Services & Disaster Agency
MITIGATION PLANNING MEETING JUNE 11, 2013
EDGAR CO 4-H FACILITY

NAME/ADDRESS *Please Print*	JURISDITION *Please Print*	PHONES/CELL *Please Print*	MILEAGE ROUND TRIP
Chuck Wooten 108 W Steidl Rd Paris IL 61944	Paris TWP Road Com.	217-465-6076 Home " 832-6076 cell	1/2

EDGAR COUNTY MULTI-HAZARD MITIGATION PLANNING MEETINGS

Assembly of the Edgar County Planning Team Meeting 5

Meeting Date: October 1, 2013
Meeting Time: 6:00pm
Place: 4-H Multi-Purpose Building, 319 E Elliot Street, Paris, IL 61944
Planning Team/Attendance: 26

The Meeting was called to order.

Duane Fidler led this meeting. We took questions from planning team members reguarding where the plan was at, what comes next, etc.

We passed around a paper to write down hours as well as mileage.

ESDA staff passed out a copy of the draft plan to each entity. They were given a few minutes to look over the plan to make sure all names, contact information, and ordinances are correct for each entity.

Next a worksheet was passed out to do Hazard Rankings.

The planning team members were divided up by entity and were asked to come up with at least 2 strategies for each hazard. They were asked to be specific.

Finally, it was time for questions and comments. We gathered all the hazard ranking, mitigation strategy sheets and compiled all the necessary changes to be made on the draft plan. Those sheets were to be sent to Beth Elllison at SIU.

Edgar County Multi-Hazard Mitigation Planning Meeting Attendance October 1, 2013

Jurisdiction	Name	Job Title/Company	Phone	Mileage
Chrisman	Rodney K White	Mayor	269-2214	75 RT
Edgar Twp	Robert Hale		880-8495	26
Metcalf	Cheryl L. Gill	Mayor	(217) 822-1984	46
Edgar	Dan Spencer	County Board	822-1982	0
Elbridge	Dirk Haddix	Trustee	275-3584	0
Vermilion	Jean McCoy	Mayor	375-3316	35
Symmes	Jeff Switzer	Highway Comm	463-1971	14
Paris	Brian Gates	Paris Fire Chief	466-5670	0
Edgar Co Board	Allen Zuber	Board Member	463-3027	14
Chrisman Fire Dept	Mike Mann	Chief	822-1585	11

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Edgar County Multi-Hazard Mitigation Planning Meeting Attendance October 1, 2013

Jurisdiction	Name	Job Title/Company	Phone	Mileage
Beacon (media)	Gary Henry	Reporter Paris Beacon-News	465-6429	2
Red Cross	Jol Holley	ARC	251-3140	2
Shiloh School	Terence Sullivan	Shiloh CUSD#1	8872364	40
Edgar	Robert J. Howey	Edgar Comt, H.D.	251-6715	2
Crestwood Dist 4	Lorraine Bailey	Supt./ Paris Unit 4	465-5391	2
Edgar	Aaron Lawson	ECEA	465 9339	10
Stratton	Doug Mattingly	Board commissioner	712-0210	22

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Edgar County Multi-Hazard Mitigation Planning Meeting Attendance October 1, 2013

Jurisdiction	Name	Job Title/Company	Phone	Mileage
CUSD #6 Chrisman	Vicki Riggen	Principal-	217-269-2022	26
Paris comm. Hosp.	Daniel Bisitup	Safety Director	217 822 6184	2
ESDA Vol	Sharlynn Kraemer	Retired	217-822-7748	20
~~County Board~~	JEFF VOIGT	BOARD MEMBER	217-822-2456	30 mi
County	Duane Fisher	ESDA		26
ESDA	Jill Taylor	ESDA	251-6033	2
ESDA	Kit Kirby	ESDA		3
County Board	Ben H Jenness	Board Chairman	217 268 2670	26
Village of Trustee Hume	Randal H. Wood	Trustee	217-887-2201	25

Page 2

Appendix B. Local Newspaper Articles

The Paris Beacon-News • Paris, IL • Monday, April 15, 2013

Public meeting on local multi-hazard mitigation plan

PBN REPORT

The Edgar County Multi-Hazard Mitigation Steering Committee will host a public information and strategy planning session April 17th at 6 p.m at the 4-H Multipurpose Building.

Through a grant, Edgar County ESDA has formed an alliance with Southern Illinois University-Carbondale (SIUC) and the Polis Center of Indiana University Purdue University Indianapolis (IUPUI) to identify potential natural hazards and to produce a mitigation plan to address the issues. The ongoing efforts of the partnership will result in a Multi-Hazard Mitigation Plan (MHMP,) which will seek to identify potential natural hazards for Edgar County, and then establish mitigation measures that are intended to reduce or eliminate the negative impact that a particular hazard may have on the locality.

The Federal Emergency Management Agency (FEMA) now requires each unit of government in the United States to have a FEMA-approved MHMP, so completion of the Edgar County plan is critical. The MHMPs will serve as framework for developing hazard mitigation projects that will reduce the negative impacts of future disasters on the communities and unincorporated areas of the county. Examples of projects that have been completed by some communities include storm shelters, warning sirens, flood walls and fire protection enhancements.

SEE MITIGATION PLAN ON PAGE 3

MITIGATION PLAN

Continued from Page 1

The planning team has identified the following hazards: tornado, earthquake, flood, storms, Hazmat release and subsidence. The planning team then selected hazards for for SIUC to model with Hazinus-MH, a GIS-based risk mitigation tool developed by FEMA. Hazus-MH is capable of predicting the probable impacts of special disasters in terms of financial, human life, safety impacts as well as various others.

Once the plan is completed, the planning team will submit it to FEMA for approval. THe planning team will also work to develop funding for any mitigation activities that are identified.

The public is invited to attend the April 17 meeting and the planning team is interested in receiving public input on the plan.

For more information about the Multi-Hazard (Pre-Disaster) Mitigation Plan, please see: www.state.il.us/iema/planning/planning.htm

Appendix C. Adopting Resolutions

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Edgar County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, Edgar County participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that Edgar County hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
County Board Chairman

_____
County Board Member

_____
County Board Member

_____
County Board Member

_____
County Board Member

_____
Attested by: County Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Brocton recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Brocton participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Brocton hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Attested by: Village Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Chrisman recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Chrisman participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Chrisman hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
City Board Chairman

_____
City Board Member

_____
City Board Member

_____
City Board Member

_____
City Board Member

_____
Attested by: City Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Hume recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Hume participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Hume hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

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Village Council Member

_____
Attested by: Village Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Kansas recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Kansas participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Kansas hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
Village President

_____
Village Council Member

_____
Village Council Member

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Village Council Member

_____
Village Council Member

_____
Attested by: Village Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Metcalf recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Metcalf participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Metcalf hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Attested by: Village Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Paris recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Paris participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Paris hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
City Board Chairman

_____
City Board Member

_____
City Board Member

_____
City Board Member

_____
City Board Member

_____
Attested by: City Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Redmon recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Redmon participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Redmon hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
Village President

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Village Council Member

_____
Attested by: Village Clerk

Resolution #_____

ADOPTING THE EDGAR COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Vermilion recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Vermilion participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Vermilion hereby adopts the Edgar County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Edgar County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____ Day of _____, 2014.

_____
Village President

_____
Village Council Member

_____
Village Council Member

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Village Council Member

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Village Council Member

_____
Attested by: Village Clerk

Appendix D. Historical Hazards

See Attached Large-Format Map and Newspaper Clippings

Appendix E. List of Critical Facilities

Not all data is available for every facility. Other facility specifics may be available upon request.

Structure Type	Facility Name	Address	City	Replacement Cost *(in $1000)*	Comments *(depends on the facility as to how the comments are structured)*	Owner
Airport	Edgar County Airport	5551 Airport Road	Paris	65000		
Communication Towers	Wprs 1440		Paris		AM	P.R.S. Broadcasting, Inc.
Communication Towers	Wacf Ch 253		Paris		FM	P.R.S. Broadcasting, Inc.
Dam	Gumm Lake Dam				Trib Clear Creek	Robert Gumm
Dam	Third Lake Dam				Sugar Creek	City of Paris
Dam	Eads Lake Dam				Trib Sugar Creek	Eads Home Association
Dam	Tessman Farm Pond Dam				Trib Clear Creek	E. F. Tessman
Dam	Lawrence See Lake Dam				Trib East Fork Big Creek	Lawrence See
Dam	Lake Wannetta Dam				Trib Sugar Creek	J. C. Minnis
Dam	Paris Twin Lake Dredge Disposal Pond Dam				Twin LAKE	City of Paris
Dam	West Lake Dam				Twin Lake	City of Paris
Emergency Operations Center	Edgar County ESDA	1023 N High	Paris			
Fire Station	Chrisman Fire Protection District	104 E Madison Ave	Chrisman			
Fire Station	Brocton Fire Protection District	103 E 3rd ST	Brocton			
Fire Station	Hume FPD	98 Front St	Hume			
Fire Station	Metcalf FPD	121 Crawford	Metcalf			
Fire Station	City of Paris Fire Department	213 W Washington	Paris			
Fire Station	Kansas Fire Protection District	402 E Buena Vista	Kansas			
Fire Station	Paris Community Fire Protection District	9391 E 400th RD	Paris			
Fire Station	Chrisman Fire Protection District #2	102 S. Indiana Street	Chrisman			
Fire Station	Paris FPD Training Facility	N. Cherry Point Road	Paris			
Fire Station	Paris Community FPD - Redmon	404 Springfield Street	Redmon			
Fire Station	Paris Community FPD - Vermilion	309 Church Street	Vermilon			

Structure Type	Facility Name	Address	City	Replacement Cost *(in $1000)*	Comments *(depends on the facility as to how the comments are structured)*	Owner
Fire Station	Paris Community FPD - Oliver	931 Il Hwy 1	Oliver			
Fire Station	Paris Community FPD - Grandview	5023 N 625 St	Grandview			
Hazardous Materials	Abitec	1800 S. Main St.	Paris		Methanol	
Hazardous Materials	Paris Metal Prods. L.L.C.	W. Hwy. 133 & Grandview	Paris		N-Butyl Alcohol	
Hazardous Materials	Paris Metal Prods. L.L.C.	W. Hwy. 133 & Grandview	Paris		Certain Glycol Ether	
Hazardous Materials	Abitec	1800 S. Main St	Paris		Heptane	
Hazardous Materials	Abitec	1800 S. Main St	Paris		Nitrogen	
Hazardous Materials	B&B Propane	13166 Highway 133	Paris		Propane	
Hazardous Materials	Bunker Hill Supply	13338 N. 1900th St	Paris		Aatrex	
Hazardous Materials	Bunker Hill Supply	13338 N. 1900th St	Paris		Anhydrous Ammonia	
Hazardous Materials	Bunker Hill Supply	13338 N. 1900th St	Paris		N Serve	
Hazardous Materials	Crop Production Service	22437 1050th St	Metcalf		Ammonium Nitrate Solution 15% H2O	
Hazardous Materials	Crop Production Service	22437 1050th St	Metcalf		Ammonium Sulfate	
Hazardous Materials	Crop Production Service	22437 1050th St	Metcalf		Anhydrous Ammonia	
Hazardous Materials	Crop Production Service	22437 1050th St	Metcalf		Herbicides & Pesticides	
Hazardous Materials	Crop Production Service	13027 E. 950th Rd	Vermilion		Ammonium Nitrate Solution 15% H20	
Hazardous Materials	Crop Production Service	13027 E. 950th Rd	Vermilion		Ammonium Sulfate	
Hazardous Materials	Crop Production Service	13027 E. 950th Rd	Vermilion		Anhydrous Ammonia	
Hazardous Materials	Crop Production Service	13027 E. 950th Rd	Vermilion		Herbicides & Pesticides	
Hazardous Materials	Crop Max	3240 Highway 16	Kansas		Anhydrous Ammonia	

Structure Type	Facility Name	Address	City	Replacement Cost *(in $1000)*	Comments *(depends on the facility as to how the comments are structured)*	Owner
Hazardous Materials	Crop Max	3240 Highway 16	Kansas		Diesel Fuel #2	
Hazardous Materials	Crop Max	3240 Highway 16	Kansas		Herbicides & Pesticides	
Hazardous Materials	Frontier Communications	223 W. Wood St	Paris		Lead Acid Batteries	
Hazardous Materials	GSI Group	13217 HWY 133	Paris		Cold-rolled Steel	
Hazardous Materials	GSI Group	13217 HWY 133	Paris		Galvanized Steel	
Hazardous Materials	GSI Group	13217 HWY 133	Paris		Sulfuric Acid	
Hazardous Materials	Illinois National Guard	1021 Legion Ave	Paris		Diesel Fuel	
Hazardous Materials	Illini FS - Chrisman Fuel 24	15725 Us 36	Chrisman		Aromatic Hydrocarbon	
Hazardous Materials	Illini FS - Chrisman Fuel 24	15725 Us 36	Chrisman		Oil	
Hazardous Materials	Illini FS - Chrisman Fuel 24	15725 Us 36	Chrisman		Ethyl Alcohol	
Hazardous Materials	Illini FS - Chrisman Fuel 24	15725 Us 36	Chrisman		Fuel Oil #2	
Hazardous Materials	Illini FS - Chrisman Fuel 24	15725 Us 36	Chrisman		Saturated Hydrocarbons	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		1-aminomehanamid E	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		dihyropgen	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		Ethyl Alcohol	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		Fuel Oil #2	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		Antifreeze	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		Kerosene	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		Herbicides & Pesticides	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		Tolune	

Structure Type	Facility Name	Address	City	Replacement Cost *(in $1000)*	Comments *(depends on the facility as to how the comments are structured)*	Owner
Hazardous Materials	Illini FS - Paris	500 W. Jasper	Paris		Aromatic Hydrocarbon oil	
Hazardous Materials	Illini FS - Paris	500 W. Jasper	Paris		Ethyl Alcohol	
Hazardous Materials	Illini FS - Paris	500 W. Jasper	Paris		Fuel Oil #2	
Hazardous Materials	Illini FS - Paris	500 W. Jasper	Paris		Isobutane	
Hazardous Materials	Illini FS - Paris	500 W. Jasper	Paris		Propane	
Hazardous Materials	Illini FS - Paris	500 W. Jasper	Paris		Tolune	
Hazardous Materials	Illini FS - Paris	500 W. Jasper	Paris		Xylene	
Hazardous Materials	Illini FS - Paris	1171 N. Main St	Paris		Aromatic Hydrocarbon Oil	
Hazardous Materials	Illini FS - Paris	1171 N. Main St	Paris		Ethyl Alcohol	
Hazardous Materials	Illini FS - Paris	1171 N. Main St	Paris		Fuel Oil #2	
Hazardous Materials	Illini FS - Paris	1171 N. Main Str	Paris		Saturated Hydrocarbons	
Hazardous Materials	Illini FS - Kansas	3240 Highway 16	Kansas		Aromatic Hydrocarbon Oil	
Hazardous Materials	Illini FS - Kansas	3240 Highway 16	Kansas		Ethyl Alcohol	
Hazardous Materials	Illini FS - Kansas	3240 Highway 16	Kansas		Fuel Oil #2	
Hazardous Materials	Illini FS - Kansas	3240 Highway 16	Kansas		Isobutane	
Hazardous Materials	Illini FS - Kansas	3240 Highway 16	Kansas		Propane	
Hazardous Materials	Illini FS - Kansas	3240 Highway 16	Kansas		Tolune	
Hazardous Materials	Illini FS - Kansas	3240 Highway 16	Kansas		Xylene	
Hazardous Materials	Cargill Inc.	616 S. Jefferson St	Paris		Grain Dust	
Hazardous Materials	Cargill Inc.	616 S. Jefferson St	Paris		Lead Acid Batteries	

Structure Type	Facility Name	Address	City	Replacement Cost *(in $1000)*	Comments *(depends on the facility as to how the comments are structured)*	Owner
Hazardous Materials	Cargill Inc.	616 S. Jefferson St	Paris		Methyl Bromide	
Hazardous Materials	Cargill Inc.	616 S. Jefferson St	Paris		Mineral Oil	
Hazardous Materials	Illini FS - Paris	102 Mcmillan Ave	Paris		Xylene	
Hazardous Materials	Midwestern Gas Transmission	2874 Midwestern Gas St.	Paris		Eythyene Glycol	
Hazardous Materials	Paris Metal Products	13571 HWY 133	Paris		Lead Acid Batteries	
Hazardous Materials	Pettium Packaging	2015 S. Main St	Paris		Battery Acid	
Hazardous Materials	Pettium Packaging	2015 S. Main St	Paris		Sulfuric Acid	
Hazardous Materials	Simonton Windows	13263 HWY 133	Paris		Argon	
Hazardous Materials	Simonton Windows	13263 HWY 133	Paris		Vinyl	
Hazardous Materials	Syungenta Seeds Inc.	12940 E. 950 Rd	Paris		Lead	
Hazardous Materials	Syungenta Seeds Inc.	12940 E. 950 Rd	Paris		Sulfuric Acid	
Hazardous Materials	Gasoline	W. Buena Vista St	Paris		Gasoline	
Hazardous Materials	Gasoline	W. Buena Vista St	Paris		1 & 2 Diesel Fuel	
Medical Care Facility	Paris Community Hospital	721 East Court St	Paris	41000		
Police Station	Paris Police Dept	211 W Washington St	Paris	1300		
Police Station	Chrisman City Police Dept	222 W Madison Ave	Chrisman	200		
Police Station	Edgar County Sheriff	228 N Central Ave	Paris	2000		
Police Station	Kansas Police Dept	Po Box 267	Kansas	100		
Potable Water Facility	Brocton WTP	North Central St	Brocton	1200		
Potable Water Facility	Chrisman WTP	Washington St	Chrisman	673		
Potable Water Facility	Hume WTP	25 Center St	Hume	100		

Structure Type	Facility Name	Address	City	Replacement Cost *(in $1000)*	Comments *(depends on the facility as to how the comments are structured)*	Owner
Potable Water Facility	Paris WTP	950 W. Trinity Ave	Clinton	2300		
Potable Water Facility	Kansas WTP	115 Cherry Ave	Kansas	1200		
Potable Water Facility	Metcalf WTP	South Side Of Village	Metcalf	750		
Potable Water Facility	Redmon Pump Station	West Hickory St	Redmon	100		
Potable Water Facility	Paris Water Storage/pump station	201 Manning Dr	Paris	2000		
Potable Water Facility	Vermilion WTP	19875 Sulfur Springs Rd	Vermilion	1000		
School	Shiloh High School	21751n 575th St	Hume	11250		
School	Shiloh Elementary School	21751n 575th St	Hume	11250		
School	Paris Bridges	203 N Central	Paris	2116.2529		
School	Treatment & Learning Center	201 S Catherine St	Kansas	1976		
School	Chrisman Grade School	111 N Pennsylvania	Chrisman	1966.321		
School	Chrisman High School	23231 Il Hwy 1	Chrisman	1823.7627		
School	Chrisman-Scottland Jr High School	23231 Il Hwy 1	Chrisman	1666.457		
School	Kansas Elem & High School	Po Box 350	Kansas	125000		
School	Mayo Middle School	300 E Wood St	Paris	10197		
School	Carolyn Wenz Elem School	437 W Washington St	Paris	8010		
School	Memorial Elementary School	509 E Newton St	Paris	7617		
School	Paris High School	309 S Main St	Paris	21963		
School	Crestwood Jr High School	15601 Us Hwy 150	Paris	7325		
School	Crestwood Elem School	15601 Us Hwy 150	Paris	7325		
School	St Mary Elementary School	507 Connelly Street	Paris	1205		
Waste Water Treatment	City Of Paris Sewage Treatment Plant	Clinton Road	Paris	6000		
Waste Water Treatment	Chrisman Stp	700 E Washington	Chrisman	3000		
Waste Water Treatment	Lift Station (old plant)	S. Shore Drive	Paris	255		
Waste Water Treatment	Lift Station (Lake)	Circle Drive	Paris	172		

Structure Type	Facility Name	Address	City	Replacement Cost *(in $1000)*	Comments *(depends on the facility as to how the comments are structured)*	Owner
Waste Water Treatment	Lift Station	Steidl Rd at Tucker Beach	Paris	120		
Waste Water Treatment	Lift Station	Ann St	Paris	100		
Waste Water Treatment	Lift Station	Roosevelt St	Paris	118		
Waste Water Treatment	Lift Station	Rt. 150 at Lakewood Dr	Paris	122		
Waste Water Treatment	Lift Station	Woodmere Dr	Paris	122		
Waste Water Treatment	Lift Station	Moss St	Paris	111		
Waste Water Treatment	Lift Station	500 E Washington	Chrisman			
Waste Water Treatment	Lift Station	Rt. 1 and Rt. 36	Chrisman			
Waste Water Treatment	Chrisman Water Plant		Chrisman			
Waste Water Treatment	Chrisman Sewer Plant		Chrisman			
Waste Water Treatment	Chrisman Pumping Station		Chrisman			
Waste Water Treatment	Chrisman Pumping Station		Chrisman			
Waste Water Treatment	Brocton Pumping Station		Brocton			
Waste Water Treatment	Vermilion Pumping Station		Vermilion			

Appendix F. Critical Facilities Map

See Attached Large-Format Map